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Archaeology in the Land of Carchemish: landscape surveys in the area of Jerablus Tahtani, 2006.

T.J. Wilkinson¹, E. Peltenburg², A. McCarthy², E. B. Wilkinson¹,
and M. Brown²

1 Dept. of Archaeology, Durham University, DH1 3LE, UK

2 Archaeology, University of Edinburgh, 12 Infirmary Street, Edinburgh EH1 1LT, U.K.

The first season of survey around the site of Tell Jerablus Tahtani, conducted in March and April 2006, demonstrated the existence of occupations from the Neolithic to the Early Islamic period. Tell Jerablus Tahtani was fringed to the west by a lower settlement of Late Uruk and early third millennium BC date, at which time settlement was also evident at Tell Sha'ir to the west and at Duluk near the junction with the Sajour. Tells formed the main mode of occupation during the Early and Middle Bronze Ages, but this pattern of occupation broke down during the Hellenistic through Late Antique periods when a more dispersed pattern of rural settlements and small towns developed. The landscape became progressively more "busy" during the Hellenistic through Late Antique periods, when the presence of conduits, canals and other landscape features attest to both increasingly intensive and extensive systems of land use.

Introduction

The Syrian and Turkish Euphrates region is a key area for understanding both the agricultural and urban "revolutions". During the past three decades much of the Euphrates valley floor has been submerged beneath major reservoirs and because of this threat of imminent loss it has received a considerable amount of attention from archaeologists. However, this has resulted in our knowledge being biased towards sites along the Euphrates River that were within the area of inundation of the major hydraulic schemes of the Euphrates dams, and specifically the tell sites that were normally selected for excavation. The aim of this preliminary report of a 4-week survey conducted in March – April 2006 is to provide a more balanced understanding of the archaeology of the Euphrates region. Here we pay particular attention to the overall record of settlements, to the landscape between the major settlements, and to a wider chronological range than is often provided by the occupation span of individual tells. This approach provides a demographic perspective on the development of settlement in the region as well as a landscape context for both the city mound of Carchemish, located on the Turkish Syrian border, and for Tell Jerablus Tahtani some 7 km to the south (Fig. 1). Unfortunately, it remains impossible to visit the site of Carchemish itself, because the

bulk of the site is a military post located within the "no man's land" of the border strip between Turkey and Syria. Here we report on the first field season of the Land of Carchemish Project, which has provided an opportunity to test various models of landscape development that have been generated by earlier surveys. Questions raised by earlier surveys include:

- Has tell-focused survey biased our understanding of the meagre occurrence of PPNB and later prehistoric sites in the broader Euphrates valley? (cf. Akkermans 1999)
- Was the settlement of the Bronze Age in reality a nucleated pattern dominated by the tell (as is the case of many neighbouring regions)?
- If so, when did this distribution break down into a pattern of dispersed rural settlement?
- Was Tell Jerablus Tahtani an exceptional case of an Early Bronze Age tell being located on the Euphrates valley floor, or had other third millennium sites gone un-reported? Specifically, what was the history of this swathe of "flood plain terrace", both in terms of its geomorphological development and settlement history?

It should be emphasized that the Euphrates region south of Carchemish is not *terra incognita*. Woolley and his team visited and excavated a number of sites in the region, but it was not until the 1970s that the

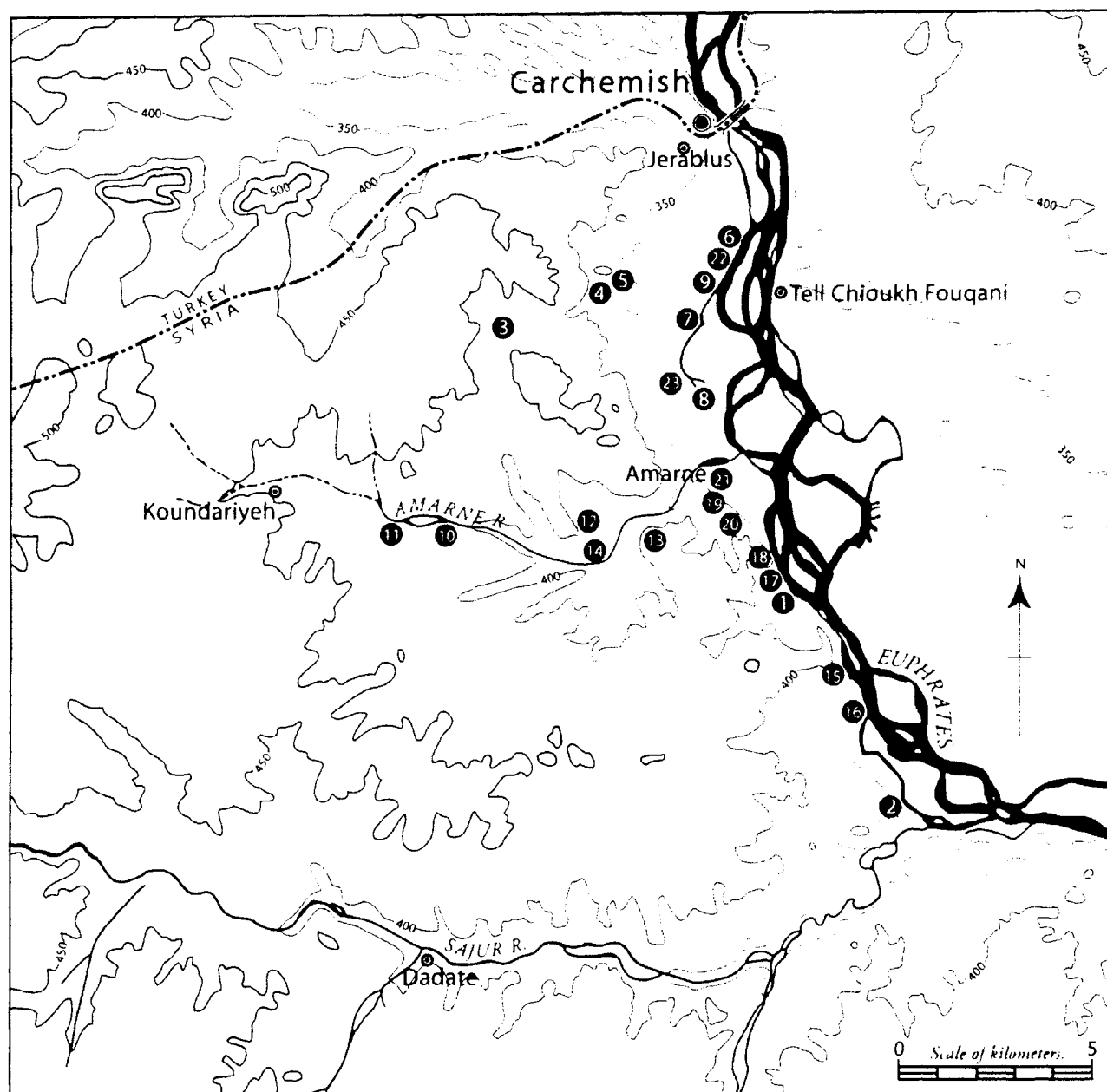


Figure 1. Sites recorded as part of the Land of Carchemish Survey, 2006. Site survey numbers are in black circles; note that Site 11 lies approximately on the western border of the survey area.

area was formally surveyed, first in 1977 by Andrew Moore, and then in 1979 by a French CNRS team (the so-called RCP team). Although both teams were primarily interested in the Palaeolithic and Neolithic periods, they published a valuable, but partial, survey of the valleys of the Sajur, Nahr al-Amarna, and Syrian Euphrates (Sanlaville 1985; Copeland and Moore 1985).

The region south of Carchemish also falls within the area surveyed by Thomas McClellan and colleagues prior to the construction of the Tishrin Dam (McClellan and Porter forthcoming), and is immediately south of the Turkish Euphrates Survey Area, where Guillermo Algaze and colleagues have generated a wealth of data on settlement trends (Algaze et al. 1994). Further insights into the landscapes of the

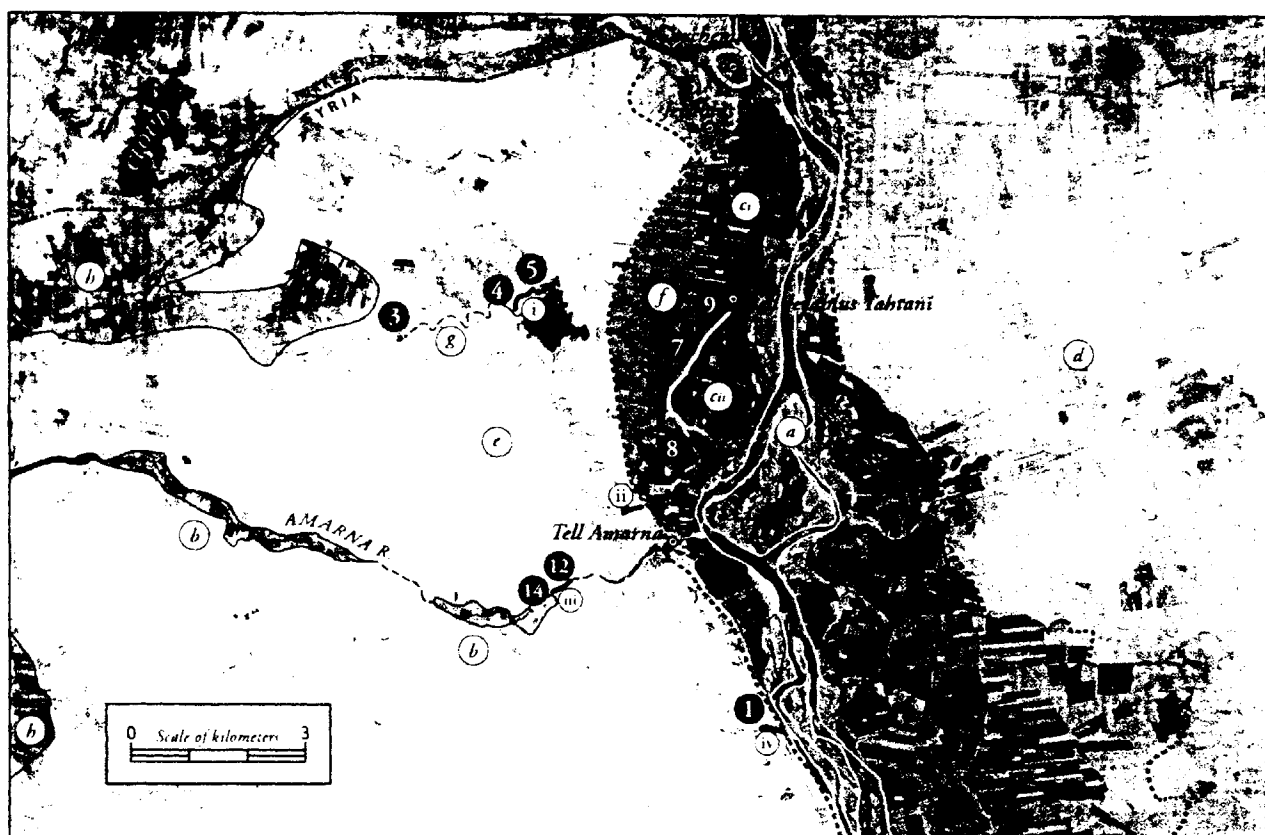


Figure 2. Corona satellite image of the northern part of the Survey area showing the main classes of land use as they were around 1970 (Corona image by kind permission of the US Geological Survey).

Selected sites numbered in black circles; North to top. Significant sites: City of Carchemish on the Turkish-Syrian border (evident as a grey zone of uncultivated land to the top of the image); Tell Jerablus Tahtani; Tell Amarna. Other features of the landscape: a) Sand and gravel bed of the River Euphrates which shows up as a series of channels interweaving between braid islands; b) the narrow band of cultivated land along the Nahr al-Amarna; c) Upper (i) and lower (ii) flood plain terrace on west bank of the Euphrates; d) eroded limestone uplands to the east of Euphrates showing the sharp traces of actively eroding wadis; e) eroded limestone uplands west of the Euphrates showing the weak traces of aggrading or less actively eroding wadis; f) coalescing alluvial fans; g) Tell Sha'ir (Site 3) and wadi leading east towards Tell Jerablus Tahtani; h) other cultivated plains. Dark lines i-iv indicate the approximate locations of Hellenistic-Byzantine conduits; the white line between 9 and 8 is the large canal on the flood plain terrace.

Euphrates have been derived from the investigations of Comfort and colleagues (2000) and of David Kennedy (1998) around Zeugma. Within the present survey area, recent geoarchaeological investigations around Tell Amarna by Cornet, Morandi and others have also added to what is a rather large but decidedly uneven data base (Cornet 1993; Cornet, and Alvarez Perez 2004). Despite these numerous investigations, the Euphrates Valley south of Carchemish and its immediate hinterland had never been subjected to a modern intensive survey of the total settlement and landscape. As a result of the overall bias towards the investigation of tells of the riverine zone it is easy to get the impression that

the Euphrates Valley was an intensively settled corridor of land, contained within sparsely settled regions to the east and west (Wilkinson 2007). The objective of the 2006 survey was to redress this imbalance by providing a more even and intensive coverage of settlement and landscape for a relatively limited swathe of land measuring 8 km E-W by 20 km N-S along the west bank of the Euphrates from the Syrian Turkish border to the mouth of the Sajur (Fig. 1). Because of the brevity of the 2006 field season this report must be regarded as neither detailed nor comprehensive. Nevertheless, it does provide an overview of trends in settlement and land use that should form a basis for compari-

| Period | Type of site occupied | Site Numbers | No of sites |
|-----------------------------------|-----------------------|----------------------------------|-------------|
| Late Pleistocene / Early Holocene | Hilltop settlement | 13, 20 | 2 |
| Halaf & Ubaid | Small, low site | 19 | 1 |
| | Hill-top mound | | 0 |
| | Tell | 3, 21 | 2 |
| Uruk & Early Bronze Age | Small, low site | 2 | 1 |
| | Hill-top site | 1, 5 | 2 |
| | Tell | 3, 10, 21, 22, C | 5 |
| Middle & Late Bronze Age | Small, low site | | 0 |
| | Hill-top site | 1,5 | 2 |
| | Tell | 3,10 | 2 |
| Iron Age | Small, low site | 6 | 1 |
| | Hill-top site | 1,5 | 2 |
| | Tell | 10 | 1 |
| Hellenistic & Roman | Small, low site | 1, 12, 14, 16 | 4 |
| | Hill-top site | 5, 15, 18 | 3 |
| | Tell | 3, 10, 11 | 3 |
| Byzantine & Early Islamic | Small, low site | 1, 2, 4, 7, 8, 9, 10, 14, 16, 21 | 10 |
| | Hill-top site | 5, | 1 |
| | Tell | | 0 |
| Mid-Islamic | Small, low site | 22 | 0 |
| | Hill-top mound | | 0 |
| | Tell | | 1 |

Table 1. *Jerablus Tahtani Region: Classes of site according to time period.*

son with neighbouring regions, as well as contributing a foundation for future seasons of investigation.

Field Techniques

For this initial field season, field techniques included a mixture of reconnaissance investigations, to derive an overview of the basic pattern of settlement, and targeted sampling to answer specific questions. Reconnaissance, building upon the considerable local knowledge and skills of our representative Mohammed Ali, was effected by means of vehicular survey along the main roads and tracks. This supplied a broad overview of tell settlements, many of which had been visited by the earlier surveys of the 1970s (Sanlaville 1985; Copeland and Moore, 1985).

Pedestrian surveys explored specific valleys that were inaccessible to our mini-van, as well as significant hills in the area. It was one of the working hypotheses of the initial survey season that Late Palaeolithic and Neolithic sites may have been under-represented in the original surveys because

such sites were positioned along inaccessible wadis or upon hills and promontories. In fact, although a rain of lithics, and one or two lithic sources were found along the Wadi Sha'ir (between Sites 3 and 5, Fig. 2) wadi floor investigations failed to provide any significant prehistoric sites. On the other hand, hill tops and other topographic eminences proved to have been much more populated (for all periods) than was shown by previous surveys.

To maximize the recovery of archaeological information from the flood plain terrace between Carchemish and the Nahr al-Amarna it was necessary to undertake:

- transect surveys within sample fields,
- the recording of sedimentary profiles within wells dug for the irrigation of cotton and other crops.

The former entailed team members collecting surface artefacts (mainly pottery, tile and occasional lithics) while walking in parallel lines of 100 m lengths across fallow and un-vegetated fields. Where fields were longer than 100 m, multiple transects

| Site | Length | Width | Height | Occupation Periods |
|--|--------|--------|--------|--|
| Site 1: Khirbet Seraisat, tell and lower town located between village of Khirbet Seraisat and Euphrates. | 200 m | 150 m | | M/L EBA; MBA; LBA; E/M Iron; Seleucid; LRom/Byz; Early Islamic |
| Site 2: Duluk (Ushariyyah). Extensive site immediately N of junction of Sajour with Euphrates. | 240 m | 100 m | | Uruk (LC3-5); M/L EBA; LRom/Byz. |
| Site 3: Tell Sha'ir. Small, prominent tell immediately E of village of Tell Sha'ir. | 90 m | 60 m | 10 m | Halaf; Ubaid; Uruk (LC3-5); M/L EBA; MBA; LBA; Seleucid; Roman |
| Site 4: 'Ain al-Abid. Small flat site in Wadi Tell Sha'ir NW of Tashatan village. | 100 m | 75 m | < 1m | LRom/Byz; Early Islamic |
| Site 5: Tashatan (Marm al-Hajar or Qanat according to Copeland & Moore 1985: 70). Low tell on limestone hill on N side of Wadi 'Ain al-Nemla (= Wadi Tell Sha'ir); NW of village of Tashatan. | 140 m | 80 m | 11 m | M/L EBA; MBA; LBA; E/M Iron; Seleucid; Roman; LRom/Byz. |
| Site 6: Jerablus Tahtani Village. Located at S end of village, near new Euphrates bridge. | 250 m | 90 m | 0.75 m | Iron Age |
| Site 7: Khirbet Wadi Mansur. Small flat site on flood plain terrace near Hawi and Tell Jerablus Tahtani. Immediately west of relict canal. | | | | LRom/Byz; Early Islamic |
| Site 8: Al-Jermideh, 1 km SE of village of Jemal. Low mound, partly exposing a 1.5 m high section. | 130 m | 80 m | 1.00 m | LRom/Byz |
| Site 9: Jerablus Tahtani south. On edge of flood-plain terrace 200 m S of Tell Jerablus Tahtani. | 60 m | ? | 0.70m | LRom/Byz |
| Site 10: Tell 'Ain al-Beida. Small, prominent tell c. 0.5 km west of village of 'Ain al-Beida. 1 ha lower town, of mainly Late Roman-Byzantine date, extends to the south and southeast. | 100 m | 100 m | 18 m | E EBA; MBA; LBA; L Iron; Seleucid; Roman; LRom/Byz |
| Site 11: Tell Ma'zala. Small, prominent tell NE of village of Ma'zala, & between road & Nahr Amarna. | 80 m | 80 m | 12 m | Seleucid; L.Rom/Byz |
| Site 12: Wadi al-Nagout, small prominent mound, part natural, N of Manbidj-Jerablus road, near confluence of Wadi Nahr Amarna & Wadi al-Nagout. Cut by bulldozer. | 24 m | 20 m | 0.30 m | Seleucid; Roman |
| Site 13: Jebel al-Mitraz; scatter of chipped stone on summit of limestone hill overlooking Nahr al-Amarna. | 80 m | 80 m 0 | 0 m | Late Palaeolithic |

Table 2. Gazetteer of sites.

E/M/L EBA= Early/Mid/Late Early Bronze Age; MBA= Middle Bronze Age; LBA = Late Bronze Age; E/M/L Iron Age=Early / Middle/ Late Iron Age; L Rom /Byz = Late Roman / Byzantine.

were collected, the distance apart being sufficient to provide an even coverage across the entire field. Despite the fact that in spring 2006 the majority of fields were obscured by growing cereals, there were

sufficient fields without crops to supply sample "windows". The relatively even scatter of wells provided excellent views of the subsurface stratigraphy, thereby enabling the history of soil development to

| Site | Length | Width | Height | Occupation Periods |
|--|--------------|--------------|-----------|--|
| Site 14: Two low sites on N bank of Nahr al-Amarna; ca. 2 km E of 'Ain al-Beida. | 70 m 40 m | 35 m 40 m | 0.5-1.0 m | Seleucid; Roman; LRom/Byz |
| Site 15: Meshirfe. Small low site ca. 3 km N of village of Kirk Mughara. On limestone hill adjacent to Euphrates River (Lake Tishreen), Framed by wadis to N & S | 100 m | 100 m | < 1 m | Seleucid |
| Site 16: Kirk Mughara. Extensive site N of village of Kirk Mughara. Covers nearly 2 ha, with a lower site (A) near Lake Tishrin, & upper site on hill to W | 150 m | 110 m | 1 m | Seleucid; Roman; LRom/Byz; Early Islamic |
| Site 17: ca. 2 km NE of Khirbet Seraisat on limestone cliff top. A 25 × 25m square building occurs at N end of site. | 100 m | 30 m | < 1 m | Early Islamic |
| Site 18: Serai. Occupation extending over ca. 1 ha on S-facing limestone slopes overlooking a deep dry valley to S. Includes complex of rock-cut tombs. | – | – | – | Seleucid |
| Site 19: Wadi Amarna, Ca. 1.5 km S of Tell Amarna, ca. 200 m from edge of Euphrates flood plain. Small Halaf site of indeterminate size within olive orchard and cut by a small wadi. Investigated by Belgian team. | – | – | – | Halaf |
| Site 20: Mughar Seraisat. PPNB / early ceramic Neolithic site on limestone hill ca. 2 km S of Tell Amarna. The small area of remaining midden gives an estimated height of 0.5 m. | 60 m | 30 m | 0.5 m | Pre-pottery Neolithic; Early ceramic Neolithic |
| Site 21: Tell Amarna. Large tell with Roman / Byzantine lower town excavated by Belgian Mission. | 250 m | 200 m | 20 m | Halaf, M/L EBA, L.EBA, MBA, LBA, Iron, Seleucid, Roman, Byz* |
| Site 22: Tell Jerablus Tahtani. Small, prominent, Bronze Age tell excavated by team from the University of Edinburgh. | | | | **Uruk (LC3-5); lower site LC4-5; E EBA; M/L EBA; Late Iron; Late Roman? Mid. Islamic. |
| Site 23: Jamel. Low mound ca. 1 ha; see Copeland and Moore report. | 80 m | 80 m | 3.0 m | ***MBA; Roman; Islamic |
| * Tunca 1999: ** Jerablus Tahtani: Peltenburg 1999a. *** Site 97, Copeland & Moore 1985, p. 71. | | | | |

Table 2 (continued). Gazetteer of sites.

E/M/L EBA= Early/Mid/Late Early Bronze Age; MBA= Middle Bronze Age; LBA = Late Bronze Age; E/M/L Iron Age=Early / Middle/ Late Iron Age; L Rom /Byz = Late Roman / Byzantine.

be assessed, as well as any subsurface archaeological features to be recorded.

Dating of sites and the landscape approach

After the 2006 field season sufficient artefacts had

been drawn to enable a skeleton chronology to be established for most sites visited (Tables 1 & 2). Rather than making a conventional period-by-period presentation, with the pretence of greater accuracy than the field data could support, we have chosen to present the data in terms of "settlement landscapes" (Table 1). This approach sets out the basic

periodization of settlement as it appears in the landscape, and takes account of the relative visibility or otherwise of ceramic types (Casana 2007). Although this approach makes certain assumptions regarding settlement continuity, it focuses on the way that tells appear to provide long term islands of continuity in the landscape (hence their longevity and height), and that as a result certain phases will be under-represented, either because their ceramic types are not very conspicuous or well established, or because the layers in question have been obscured by later deposits. The latter point was particularly evident at Tell Ma'zala (Site 11) where the original French and British surveys had recorded Middle Bronze Age pottery (Copeland and Moore 1985: 77), whereas despite careful scrutiny our own survey only yielded clearly diagnostic material of Seleucid and Roman date from a high mound that clearly had a much longer history of occupation. In the context of a preliminary field season, this approach has the added benefit of avoiding spurious accuracy.

In the Carchemish area settlement landscapes could be classified as a) nucleated tell-type settlements, b) villages and farmsteads dispersed across the landscape, or c) sites on hill tops (as discussed below). We emphasize, however, that where sites are grouped into, for example, an Uruk and third millennium phase, the collected ceramics have been assigned to their appropriate period designation as noted in the appropriate chronological sections (also Table 2).

Environmental constraints and structural features of the landscape

Landscape forms the context for everyday life and influences human activities in a multitude of ways, whereas the climate and plant ecology provide both opportunities and constraints on human activity. The present day rainfall, around 400 mm per annum, is sufficient in most years to nurture crops of wheat and barley, as well as olives, lentils and grapes. However, today the last three crops occur close to their climatic limits, and their cultivation in the past would have been dependent upon both climatic fluctuations and cultural choices.

The following features of the physical and cultural landscape provide a framework for social development through time:

- The broad north-south valley of the River Euphrates cuts through the off-white Paleogene and Neogene limestones of the north Syrian plateau to provide a focus for settlement as well

as an impediment to east-west traffic.

- The valley floor of the Euphrates River is frequently under-represented on archaeological maps because large areas of the ancient flood plain are today lost to archaeological research. This is because the flood plain has been drowned beneath the waters of the Tabqa and Tishrin Dams to the south, or because the very active Euphrates River has either eroded away the earlier floodplain or covered it with sediment.
- To the west of the Euphrates, a series of east-west tributary valleys incised into the local Tertiary limestones include the perennial flows of the Sajur and Nahr al-Amarna, which conduct water from catchments that extend into Turkey. On the other hand, most other valleys are either dry year-round, or only conduct water from minor springs. Although relatively small features, these wadis exhibit evidence for settlement at least as early as the fourth millennium BC, and from the pattern of lithic distribution, these valleys appear to have been important loci of human activity and movement during the Palaeolithic as well.
- A) Areas of lowland located primarily along river valleys. These provide fertile cultivable soils, sometimes irrigable, as well as an ideal pastoral resource. B) Intervening uplands, usually with a cover of thin soils developed upon Tertiary limestone or patchy remains of Pleistocene river terraces. The contrast between these two land use types is starkly evident on figure 2, which shows the uplands as extensive areas of light shading on the CORONA satellite image. That these unpromising soils can be cultivated is evident from more recent satellite images, and in spring time this undulating plateau today forms a rolling vista of wheat and barley fields. However, the present situation appears to represent a phase of unprecedented agricultural expansion which took place in the mid-20th century. During earlier times these uplands would primarily have been upland pastures and open land, perhaps taking the form of a forest-steppe mosaic during earlier phases of the Holocene.
- Clusters of ancient settlement on the Euphrates are particularly evident a) to the north east in the Samsat-Lidar-Titrih areas (Turkey), b) some 20 km to the north and south of the Syrian Turkish border, and centred on Carchemish, c) just north of the "great bend" of the Syrian Euphrates, centred on the 55 ha site of Tell Hadidi. In addition between areas b) and c) occurs the large site complex of Tell Banat (see Peltenburg 2007).

- Because cities frequently structure the surrounding region, major centres can be assumed to have a significant influence on the development of the nearby cultural landscape. Specifically, the large “citadel city” site of Carchemish, variously estimated to cover 0.5–44 ha in the third millennium BC (see Bunnens, 2007; Algaze et al. 1994, Cooper 2006, 54–6, and Peltenburg 2007), must be seen as a structural factor in the development of both landscape and settlement along the Euphrates. The presence of this major city, which assumed a regional administrative role during the Hittite empire and was a major regional centre in the Syro-Hittite period, may have promoted the growth of satellite communities when it was strong, and witnessed their decline during periods of central weakness. Alternatively, such satellite communities could have grown at the expense of Carchemish when the central city was in decline or been absorbed when the city expanded. Whichever scenario is adopted, it is possible that many of the sites in the region, at least as far south as Tell Ahmar, operated within the immediate socio-political orbit of the city of Carchemish.
- The presence of paired settlements is a common feature of Bronze Age settlement along the Euphrates in Turkey and Syria, and may come about as a result of settlements growing up at both ends of a long-term crossing point. Such paired settlements occurred in more recent times in the USA (Burghardt 1959), as well as during Roman times on the Euphrates at Zeugma (Kennedy 1998) and elsewhere (Wilkinson 2004, 182–5).

Geoarchaeology of the Euphrates Floodplain

A major factor contributing to an understanding of the development of landscape and settlement in the Carchemish region is the geomorphology of the Euphrates Valley and its tributary wadis, and therefore this formed an explicit part of the research design. Not only do many earlier studies fail to demonstrate to what degree the valley floor was occupied during the Holocene, some researchers have even suggested that the Euphrates flood plain was essentially unoccupied until the Roman period (Boerma 2001). However, it now seems likely that this was not the case but rather that the record of valley floor settlement for most of the Holocene may have been expunged by erosion or obscured by sedimentation (Akkermans 1999; Wilkinson 1999). In order to assess this question we first outline the main

Pleistocene sequence and follow it with a more detailed view of the geoarchaeology of the Euphrates flood plain, and its west bank tributaries.

The River Euphrates in Syria flows along the base of a broad trench incised some 5–50 m below the neighbouring Pleistocene terraces or cut through the white and pale brown Tertiary limestone and marl. Archaeological investigations conducted over the last 40 years along the Euphrates have identified a large number of archaeological sites, the majority of which are tells situated on the adjoining Pleistocene terraces, bedrock benches in equivalent locations, or on alluvial fans that have accumulated at the points where tributary wadis join the flood plain. The lower parts of the flood plain, being literally the area of deposition that flanks the river channel and is the most subject to flooding, tends to be of recent deposition and uninhabited.

Overall three broad river terrace complexes have been recognized:

- An upper terrace complex at elevations of 20 to 50 m above river level (Cremaschi and Maggioni 2005) includes Besançon and Sanlaville’s Q III & Q II (1985). This complex was not examined during the 2006 field season, but according to Cremaschi and Maggioni (2005) some of the upper beds include significant amounts of flint cobbles and must date to the Middle Pleistocene or earlier.
- An intermediate terrace complex at elevations of 5 to 20 m above river level consists of cemented gravels of Anatolian origin. This sequence is exposed on both sides of the river, but estimates of the outcrops of these terrace by Besançon and Sanlaville (1985, Q I) and Cremaschi and Maggioni (2005) differ somewhat.
- A lower terrace and flood plain complex between river level and some 5 m above it includes a broad low terrace along the west bank of the Euphrates between Carchemish to the north and the mouth of the Nahr al-Amarna, to the south, as well as a complex of flood plain deposits at slightly lower elevations.

This lower terrace complex includes the low, extensive terrace (described here as the Flood Plain Terrace) upon which the site of Tell Jerablus Tahtani is situated (Besançon and Sanlaville 1985, Fig. 1). The Flood Plain Terrace forms part of Cremaschi and Maggioni’s intermediate terrace as well as Besançon and Sanlaville’s Würm period terrace, thought to date to the last glacial period of the European glacial sequence. West of Jerablus Tahtani the terrace has been obscured by an apron of coa-

lescing alluvial fans and associated colluvial deposits but it re-appears a few kilometres downstream to continue to near Tell Amarna to the south. Because of contradictions between the assessments of Besançon and Sanlaville (1985) and Cremaschi and Maggioni (2005), as well as recent re-assessments that are pushing the chronology of the Euphrates terraces back to before the Pleistocene (Tuncer *et al.* forthcoming), we concern ourselves here only with the flood plain terrace and neighbouring exposures between Carchemish and Tell Amarna that were studied during the 2006 field season.

In a recent study of the soils around the site of Selenkahiye on the great bend of the Euphrates, Boerma (2001) suggested that the Euphrates valley floor was essentially uninhabited, and in fact was uninhabitable, before approximately the Roman period. That this was not the case is evident from the presence of archaeological sites dating back until at least the third millennium BC on patches of relict floodplain at Tell Jouweif, in the area of the Tabqa Dam (Wilkinson 2004, 155–56, 202), and Tell Kabir within Lake Tishrin (Porter 1995). Such sites appear to occur on small “islands” of slightly raised flood plain that remain preserved within the otherwise scoured out or alluviated Euphrates valley floor. That the upper part of the flood plain is and was inhabitable is made clear from the cuneiform texts from Emar (Arnaud 1991; Mori 2003) that refer to a significant amount of agricultural activity, and perhaps associated settlement, on the flood plain lands. This is supported by the observation that traditional villages were quite frequent on the flood plain, above the level of annual flooding (Wilkinson 2004, 20–24).

The Euphrates Valley south of Carchemish represents one of the few areas where extensive areas of the Euphrates valley floor remain exposed for archaeological investigation, other areas having been inundated below the waters of reservoirs, or removed by the actively eroding river. The location of Tell Jerablus Tahtani on the eastern edge of a low flat alluvial bench, termed here the “Flood Plain Terrace”, suggests that the site might occupy an equivalent position to Tells Jouweif and Kabir to the south. That it was subjected to at least occasional inundations by major floods is suggested by the geomorphological investigations of Richard Tipping (in Peltenburg *et al.* 1996 and 1997), which showed that a series of high-energy floods appear to have risen above the level of the adjacent Flood Plain Terrace in the vicinity of the tell. Despite this evidence for a high flood stage during the third millennium BC, sections exposed in numerous irrigation wells cut through the flood plain terrace

between the town of Jerablus and Tell Jerablus Tahtani showed no evidence of equivalent flood horizons. It is possible, however, that such layers may have been masked by the action of soil formation and incorporated into the soil profile of the Flood Plain Terrace.

The Flood Plain Terrace (Fig. 2: ci and cii) forms an extensive low, flat bench at Jerablus Tahtani rising some 3–4 metres above the modern flood plain. The lower flood plain, which today is sufficiently above the level of annual flooding of the Euphrates to be occupied by occasional houses and hamlets, lacks archaeological sites and appears to have been deposited within the last few hundred years. To the west, the Flood Plain Terrace merges into a broad apron of coalescing alluvial fans deposited from a series of east-flowing wadis draining the limestone plateau (Fig. 2: f). At the north end of the plain, immediately east of the town of Jerablus, the Flood Plain Terrace is bounded to the west by the low bluffs of a Pleistocene terrace (mapped by Besançon and Sanlaville as Würm in date). To the east the Flood Plain Terrace is bounded by a low scarp which separates the main part of the Flood Plain Terrace (c i) from a slightly lower member (c ii). This low topographic rise appears to have been followed by a large canal deriving its water from the Euphrates River some distance upstream (Fig. 2: white line).

The sedimentary sequence through the Flood Plain Terrace was interpreted by means of 31 sections exposed in the shafts of shallow wells dug in recent years for irrigation. The most common sequence revealed approximately 100–150 cm of reddish brown loam overlying a well-developed soil B horizon of similar clay loam permeated by a dense matrix of off-white calcium carbonate soft concretions (Fig. 3: WP 210). Such concretions usually accumulate in the soil over thousands of years, and testify to the fact that the upper 2 m of soil are ancient, almost certainly in excess of 5000 years old. This observation is supported by the presence of Uruk and early third millennium BC pits that clearly cut into the upper part of the soil profile as well as through this calcium carbonate enriched horizon (Fig. 4). The presence of occasional potsherds within the upper 100–150 cm of the soil profile suggests that this loam accumulated in the presence of human activity (see below). Below approximately 200 cm depth the calcium carbonate horizon became negligible and the deep accumulations of loamy sand, silty sand, or silty clay appear to represent the deposits of an earlier Euphrates flood plain.

Only rarely were gravels deposited by the Euphrates channel in evidence, presumably (accord-

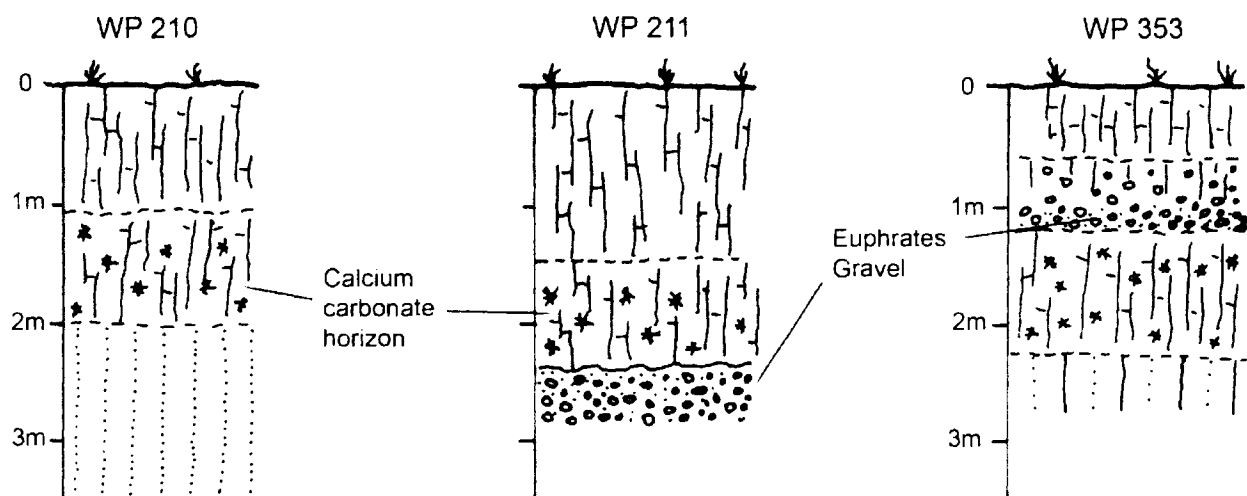


Figure 3. Sections through the flood plain terrace at WP 210, 211 and 353.

ing to local well owners) because these occur at depths greater than 3 m. At two locations (WP 211 & WP 293) coarse well-rounded gravels of Anatolian provenance occur at higher levels, but still below the calcium carbonate horizon to a maximum depth of 240–300 cm (Fig. 3: WP 211). Further north, near the town of Jerablus (WP 282, WP 353 and WP 366), a distinctive bed of gravel occurs between 60 and 170 cm depth (Fig. 3: WP 353), and occasionally appears as a dense scatter of gravel and cobbles on the surface of ploughed fields. Where Euphrates

gravels occur below the calcium carbonate horizon these can be inferred to be part of a Euphrates channel in excess of 5000 years old, whereas where gravel occurs above the same calcium carbonate horizon the gravels are arguably more recent. However, the presence of calcium carbonate rinds on the underside of the upper gravels suggests that this gravel also is probably many thousands of years old. This supposition is supported by the observation that the gravels entirely lack sedimentary structures, presumably because long term processes of soil formation have disrupted the sedimentary stratigraphy. These upper gravels appear to form alignments across the flood plain terrace to the south of the town of Jerablus, and can be tentatively interpreted as representing relict palaeo-channels of an ancient Euphrates river channel.

Despite the large number of pits investigated there was no evidence for high level flood deposits as recorded at Tell Jerablus Tahtani. This may be because such deposits have been transformed by soil forming processes. At the site of Tell Jerablus Tahtani, where the presence of high-level Euphrates sediments implies the former existence of high-energy floods during the third millennium BC (Tipping in Peltenburg et al. 1996, 1997), Early Bronze Age flooding may have been restricted to areas alongside the Euphrates channel. This may be because the flood plain terrace to the west was protected by some form of bund, flood-protection bank, levee, or other impediment.

Overall, the mature soil profiles and the existence of calcium carbonate-encrusted Euphrates gravels suggests that the Flood Plain Terrace is Pleistocene

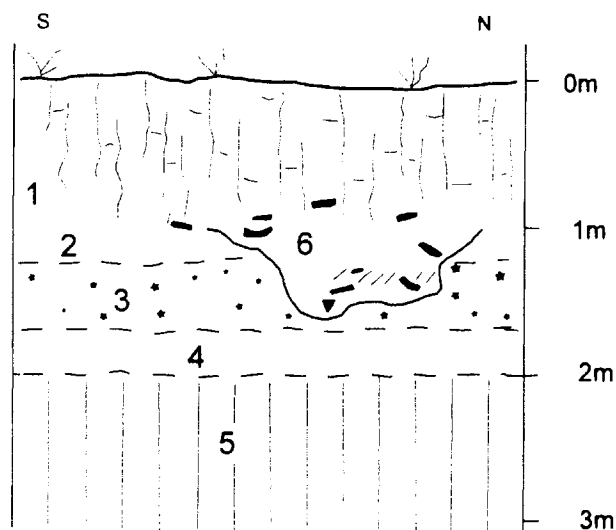


Figure 4. Uruk pit exposed in the west face of well at WP 215 to the NW of Tell Jerablus Tahtani (for location see Fig. 9).

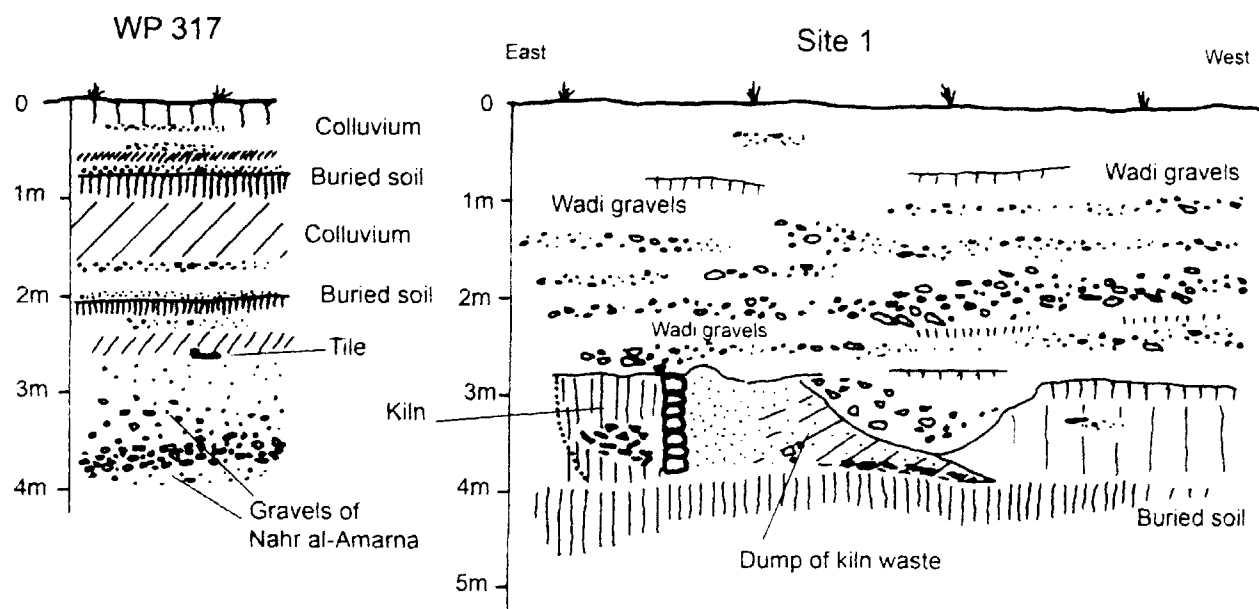


Figure 5. Left) Section at WP 317 through colluvial deposits exposed in the south bank of the Nahr al-Amarna (recorded by M. Semple). Right) Section exposed in the Wadi Seraisat showing pottery kilns and their associated waste deposits buried beneath high-energy wadi gravels.

in date, and the presence of an upper gravel sequence near Jerablus town suggests that indeed the terrace developed over at least two broad periods of alluviation. In addition, the upper part of the terrace appears to have been aggraded by the accumulation of 50–75 cm of sediment over the last 5000 years.

Patterns of sedimentation in the tributary wadis

The tributaries on the west side of the Euphrates are mainly wadis which conduct flow during the winter wet seasons only. The exceptions to this are the Nahr al-Amarna and the Sajour, both of which conducted flow year round, or at least did until modern over-pumping reduced flow in some areas to a trickle. That perennial flow once occurred in other wadis is evident from the presence of relict spring heads, and the occasional remains of artificial open channels that clearly gathered their flow from springs or perennial flow in the wadi beds.

The alluvial history of the Nahr Sajour and Amarna has been traced back well into the Pleistocene (Besançon and Sanlaville 1985). Although less is known about the history of these channels during the Holocene, Cornet has shown that the alluvial fan of the Nahr al-Amarna at its junction with the Euphrates underwent a phase of

erosion before the occupation of nearby Tell Amarna, followed by alluvial fan formation during the Bronze Age occupation, terminated finally by the phase of recent incision (Cornet 1993).

About 2 km upstream of Tell Amarna the deep cut banks of the stream reveal colluvial slope deposits overlying channel gravels of the Nahr al-Amarna. Dating evidence for these episodes of deposition is meagre, but at WP 317 (Fig. 5), ca. 2.5 m of silt and loam containing occasional lenses of gravel slope wash are interrupted by buried soils at 75 and 200 cm indicative of phases of slope stability. The colluvial deposits overlie, at a depth of 2.60 m, fine silt loam penetrated by fossilized root casts (within tufa). A fragment of Late Antique tile at around 2.60 m depth demonstrates that the overlying sediments accumulated over the past 1500–1800 years or less, and the presence of occasional flecks of wood charcoal within the same deposits perhaps results from the burning of woody vegetation on or near the slopes. Similar accumulations of charcoal-rich sediment of roughly comparable date have also been noted in the upper Balikh valley south of Urfa (Rosen 1997). Most of these upper sediments appear to have been washed from the adjacent slopes to the south, where there appears to have been a significant amount of human activity, whereas the sediments beneath are of “high-energy” deposits of the main Nahr al-Amarna channel.

More dramatic alluviation was apparent along the Wadi Seraisat near its junction with the main Euphrates valley. Here, an entire “industrial” quarter of the Roman / Byzantine and early Islamic lower town was buried by 2–3 m of gravel deposited by high-energy wadi flow. The associated tile, limestone and pottery kilns were founded upon a well developed and stable buried soil, and deposits of kiln waste are occasionally evident upon this surface (Fig. 5: Site 1). That there was a dramatic change in sedimentary regime after the use of these industrial installations is implied by the thick deposits of coarse limestone gravel (up to 25 cm long axis) which overlie the kilns and associated structures.

It appears that there has been a considerable amount of colluvial sedimentation over the last 2000 years, during which time local wadis attained occasional high energy flows. These episodes of accelerated erosion of valley-side slopes and alluvial sedimentation resulted in the burial of some water conduits, and at the site of Khirbet Seraisat, the obliteration of parts of the industrial quarter. Although there is evidence that human activity destabilized the land surface thereby initiating the accelerated erosion of valley sides, and perhaps encouraging high-energy floods in the tributary wadis, it is also necessary to appreciate that these environmental changes probably result from a combination of circumstances. The wadis also respond to variations in local rainfall and storm run-off, as well as to changes in the position of the Euphrates River. When the Euphrates migrates to the west, that is close to the tributary wadis of the west bank,

it removes the alluvial fans, increases wadi gradients, and initiates a new phase of wadi incision. Conversely, if the Euphrates then shifts eastward, alluvial fans aggrade, colluvium accumulates, and erosion and wadi incision diminishes (Wilkinson 1978).

Overall, the wadi sediments and their associated slope deposits result from the interaction of the human activities that destabilize the landscape, fluctuations in rainfall regime and climate that can exacerbate erosion by increasing slope runoff and stream discharge, and changes in the geometry of the wadi profiles resulting from shifts in the position of the main Euphrates River. Nevertheless, it is clear that the undulating uplands to the west of the Euphrates have undergone a significant amount of erosion over the last 2000–3000 years which has resulted in the removal of at least part of the original soil cover.

The development of the settlement pattern

Tells constitute the sites of choice for most archaeological excavations among the Euphrates rescue archaeological projects, and although such prominent mounds are an important feature of occupation their significance in terms of overall settlement varies through time. The 2006 survey was a semi-intensive exercise in which vehicular survey alternated with hill climbs and ridge walks as well as more formal pedestrian transects across the flood plain terrace. The results of these investigations,

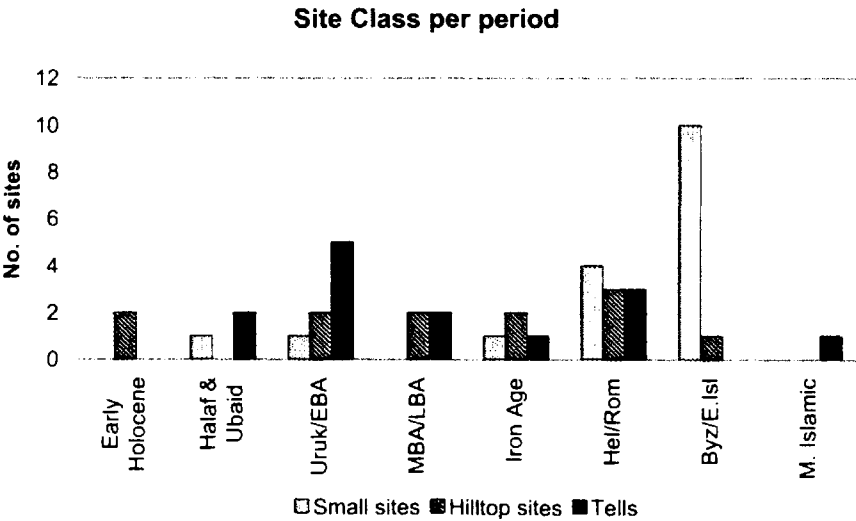


Figure 6. Plot of settlement types (see text) according to broad chronological phases.

which are summarised in Table 2 and Figure 6, show how settlement locations and types apparently varied according to broad chronological phases. It must be emphasized that the sample size (23 sites) is small, and that many earlier occupation phases remain buried beneath the later phases of multi-period mounds. Bearing these caveats in mind, three broad classes of occupation site can be recognized:

- Hilltop settlements. These occur on the summits of hills, either overlooking tributary wadis, or (as in the case of Site 2) on high limestone bluffs overlooking the Euphrates River. In many cases (e.g. Sites 2 and 5) these might be regarded as tells on summits, and even in the case of the Neolithic Site 20, some 50–100 cm of cultural deposit were recognized. On the other hand, Site 13 was no more than an artefact scatter strewn over the limestone rock.
- Small, low sites: sites of ca. 1 ha area or less and with less than 2 m of cultural accumulation. This class also includes more extensive “lower towns” which developed at the foot of tells, as was the case at ‘Ain al-Beidha and Tell Amarna (Sites 10 and 21 respectively).
- Classic multi-period tells. These are generally around 1–2 ha in area and up to 18 m in height, with the largest being Tell Amarna covering some 250 × 150 m and 22 m high.

Settlement Phases

As noted above the following narrative treats settlement in the form of episodes of landscape settlement. In most cases a brief note is made of the main ceramic types employed for dating these episodes, but in three cases specific site assemblages are illustrated because of their interest to the development of early agricultural communities (Mughar Seraisat: Site 20), urbanization in the fourth and third millennium (Tell Jerablus Tahtani), and the Neo-Hittite city of Carchemish (Jerablus Tahtani village: Site 6).

Late Pleistocene / Early Holocene

The 2006 season witnessed the discovery of two sites of Late Pleistocene / Early Holocene date. Both Jebel al-Mitraz (Site 13) and Mughar Seraisat (Site 20) occupied hill top positions with extensive views over the surrounding riverine lowlands and Euphrates flood plain. Such locations contrast with the better known Epi-Palaeolithic and Neolithic sites known along the Euphrates, which are mainly

on river terraces and other low elevation terrain. This is not to say that lower altitude sites were not in use; but rather if such sites were inhabited, the associated cultural deposits probably lie buried beneath multi-period tells such as Tell Amarna, or Carchemish, or alternatively may have been obscured by Euphrates flood plain deposits. The sparse scatter of lithics at Jebel al-Mitraz (Site 13) includes a range of blades and smaller lithics of ambiguous typology that might date to the Upper Palaeolithic or earliest Holocene.

Mughar Seraisat (Site 20) is worthy of mention because it represents a significant addition to the growing corpus of Neolithic sites known from the Syrian Euphrates Valley (Akkermans 1999; Akkermans and Schwartz 2003). This late PPNB/early ceramic Neolithic settlement occupies the summit of a prominent limestone hill that overlooks a deep valley to the south, a second more open valley containing a Halaf site (Site 19) to the north, and the Euphrates Valley and floodplain to the east. The roughly 50 × 100 cm of cultural deposit and midden on the summit extends over some 60 m × 30 m. Although the site appears small, the slopes to the northeast exhibit a sparse scatter of debris that may either have been washed from the site up-slope, or represent additional midden material and *in-situ* occupation. If the material is *in-situ*, this slope debris implies that the site extends a significant distance down slope and to the northeast. Lithics (Fig. 7) are abundant on the surface of the site, whereas pottery (Fig. 8) is scarce, although the latter is more common where one or two robber pits have disturbed the substrata. The stone footings of a wall are visible on the northwest side of the site, and a subtle alignment of rough limestone blocks around the eastern edge of the site may represent another wall. Although no querns were observed on the main site on the summit, several were glimpsed on the northeast-facing slope.

The presence of several elongated chert lithics resembling Amuq points (Fig. 7) would support an occupation in the very early stages of the ceramic Neolithic, perhaps equivalent to the occupations at Halula (Molist 1996), or the so-called pre-Proto-Hassuna of Tell Seker al-Aheimar in the western Khabur (Nishiaki and Le Miere 2005).

Halaf & Ubaid

Because only a small number of occupations yielded Halaf and Ubaid sherds, there is no clear pattern of settlement during these periods. One small, low site (Wadi Amarna: Site 19¹), investigated by a Belgian team, has suffered a considerable amount of distur-

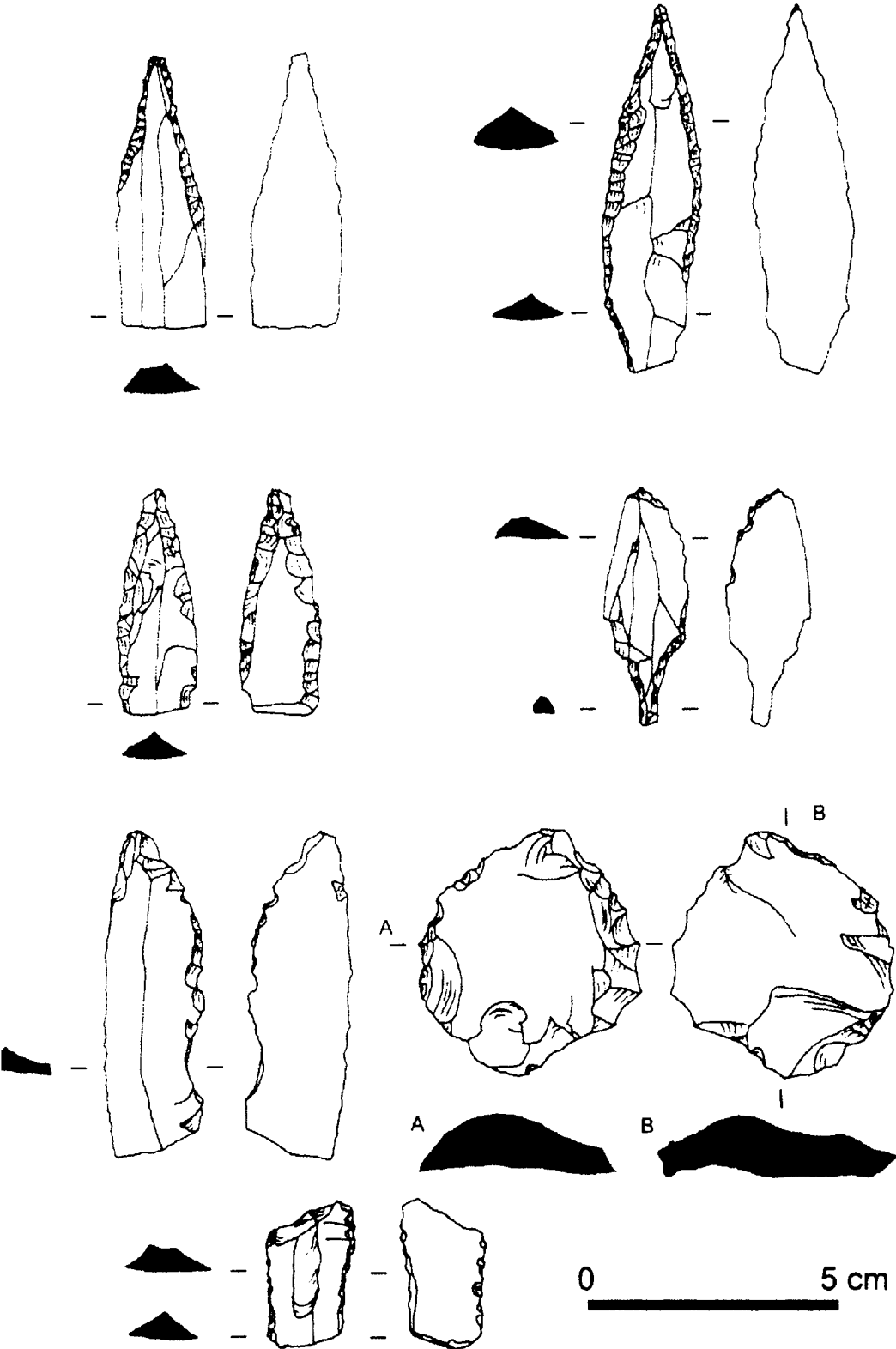


Figure 7. Neolithic artefacts from Site 20.

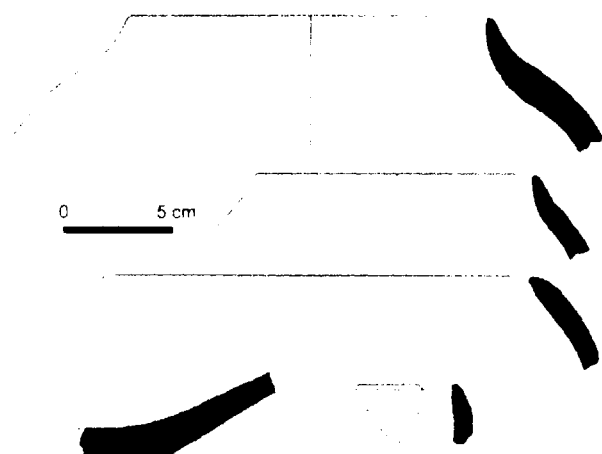


Figure 8. Neolithic pottery from Site 20.

bance as a result of the erosive activities of the small, high-energy Wadi Amarna. Nevertheless, it is evident from the detailed study of Cruells (2004), that settlement was significant, but of relatively short duration. Elsewhere, the discovery of an Ubaid sherd in slope deposits exposed in the cut bank of the Wadi Amarna north of Tell Amarna (Site 22), as well as the presence of one or two Halaf and Ubaid sherds at Tell Sha'ir (Site 3), suggests that the initial phase of tell formation must have started as early as the 6th or 5th millennia BC, if not earlier.

Uruk and Early Third Millennium BC

Here the preliminary ceramic phases are given according to the Late Chalcolithic sequence (LC 1–5) published by Rothman (2001, 7–9) and by Wright and Rupley (2001). By the fourth and third millennia BC most settlement took the form of nucleated occupations on tells. However, it is noteworthy that the Uruk settlement at Site 2 (Duluk: LC 3–5), near the junction of the Sajur and Euphrates, as well as the enigmatic lower settlement at Jerablus Tahtani (see below), might form examples of the low mounded sites that are quite common during the so-called “Uruk expansion” period (Algaze 1993). Tell Jerablus Tahtani, Tell Sha'ir, the citadel mound of Carchemish, and Tell Amarna, all form classic examples of multi-period tells. These appear to have formed part of a settlement hierarchy, with the citadel and lower town of Carchemish at the apex, the single mound large centre of Amarna, forming a second rank, and the smaller mounds of Tell Sha'ir, Tell Jerablus-Tahtani and others forming the lowest rank of the hierarchy. Other third rank sites may include the smaller tells (e.g. Sites 10 and

11) along the Nahr al-Amarna, of which most of the Bronze Age occupation appears to have been obscured by the thick overburden of Iron Age and Classical period occupation. In addition, Early Bronze Age occupation occurs at two hilltop sites (Sites 1 and 5), where the cultural layers are sufficiently deep to identify these sites as hilltop tells (Fig. 18 for Site 1). Nevertheless, that the settlement pattern of the region does not simply fall into a straightforward hierarchy is suggested by the broader pattern of occupation that includes major ceremonial centres, such as Tell Banat, as well as smaller but clearly distinctive ritual or ceremonial sites such as Gre Virike, and fortresses like Jerablus Tahtani (McLellan 1999; Ökse 2007; Ökse 2005; Peltenburg *et al.* 1996, 1997).

Uruk and Early Third Millennium BC settlement in the vicinity of Tell Jerablus Tahtani

While the most extensively excavated fourth and third millennium occupation in the survey area is at Tell Jerablus Tahtani (Site 22), the deeply stratified

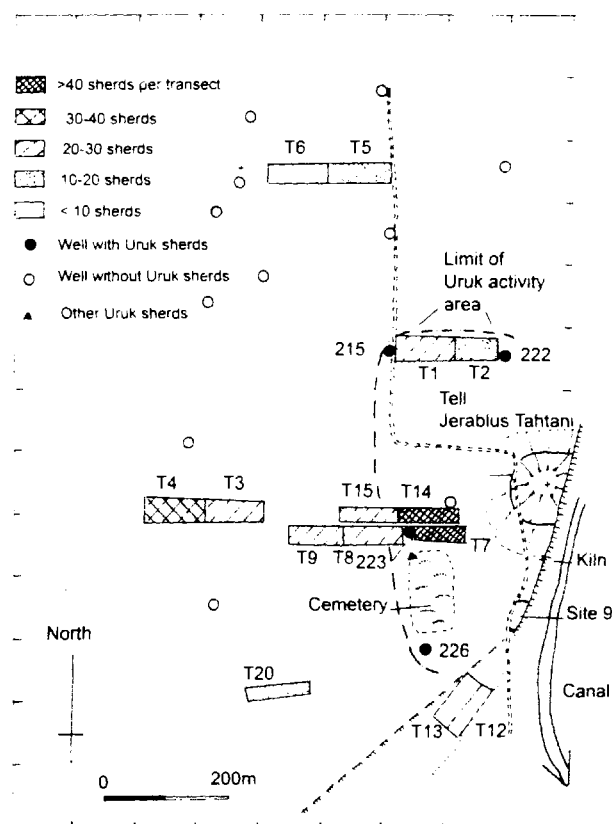


Figure 9. Immediate area of Tell Jerablus Tahtani showing surface sherd densities as recorded from transects and the location of all wells investigated for buried ceramic horizons.

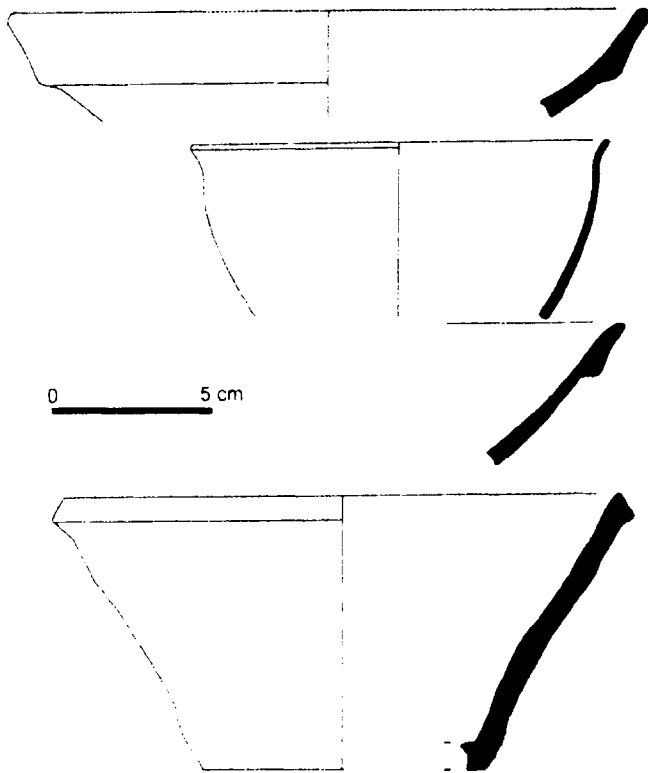


Figure 10. *Uruk and early EBA pottery from pit at WP 215 near Tell Jerablus Tahtani.*

Uruk-period deposits on the tell did not allow for extensive exposure of the fourth millennium horizon. That being said, the chronological control at Tell Jerablus Tahtani provides a glimpse into the sequence of changing settlement patterns in the region. Following an initial shallow deposition of indigenous Local Late Chalcolithic materials directly on the ancient floodplain (Peltenburg et al. 2000, 58, 68), a settlement was established that used local Late Chalcolithic and Uruk-style material culture (Periods 1A-B: LC 3–5). Without an apparent hiatus, occupation at the site continued into the 3rd millennium using typical Early Bronze Age material culture in pre-fortification phase Period 2A. At approximately 2700 BC (Peltenburg 2007), the settlement was re-organized and a perimeter wall was constructed, nucleating the settlement and increasing height above the floodplain in each subsequent building phase (Period 2B).

It must be remembered, however, that settlements in the Late Uruk period, including Tell Jerablus Tahtani and Carchemish, would not have appeared as the tall mounds that we see today. Well-sections (WP215, WP222, WP223, WP225, and WP226:

Fig. 9) examined around Tell Jerablus Tahtani in the survey produced Uruk-type pottery (LC 4–5) indicating that the Uruk-period settlement was extensive, unlike the nucleated fortified settlement of the EBA that only extended to around 1 ha. Bevelled Rim Bowls and related Late Uruk (mainly LC 5) and early third millennium pottery were found within pits cut into a calcium carbonate-enriched horizon (WP 215 & 223: Fig. 10), in a soil horizon above the calcium carbonate horizon (WP 226) or within the upper part of this same horizon (WP 222). This extended activity area of the Uruk-period and early third millennium settlement is further borne out in the transects (T7 & T14 on Fig. 9), which show a dense scatter of pottery, including fragments of Bevelled Rim Bowls, that then falls-off beyond the point where Uruk-style sherds are found in well-sections. The full extent of the fourth millennium lower settlement covers some 12 ha. As a result, the small tell dating primarily to the mid-late third millennium gives a misleading picture of how the settlement would have appeared in the fourth millennium.

Attempts had been made to increase the exposure

of the Uruk horizon at Tell Jerablus Tahtani (Peltenburg *et al.* 2000, 68) by opening test-trenches off the main portion of the mound to the west, in the vicinity of where well-sections WP223 and WP225 and transects T7 and T8 were recorded. The lack of architecture may indicate that the test-trenches were not deep enough and only exposed the sterile calcium carbonate deposits that covered the Uruk horizon on the floodplain. At the same time, the well-sections recorded in 2006 did not reveal any intact architecture, only pits and sherds. This may be an accident of where the well was placed, it may indicate simple pitting activity in this location, or it may indicate that the western extent of the Uruk/LLC settlement consisted of timber structures similar to those found in the earliest occupational deposits in the Area III exposure (Peltenburg *et al.* 2000, 58).

Uruk-type materials found at Tell Shioukh Fawqani on the opposite bank of the Euphrates (Bachelot 1999, 144; Bachelot and Fales 2005, 24–29 and 134–136) suggest that riverine communication and river-crossing already may have been important in the fourth millennium at Tell Jerablus Tahtani and may have contributed to the choice of location of this fairly extensive Uruk settlement on the floodplain terrace. Another possible factor contributing to the choice of location for Tell Jerablus Tahtani may have to do with communication routes out of the Euphrates Valley. Specifically, Bevelled Rim Bowl sherds together with other chaff-tempered wares (LC3–5) were found at Tell Sha'ir (Site 3), located up the nearest side-wadi to Jerablus Tahtani providing a node for access to the surrounding hinterland outside of the valley to the west. Furthermore, Tell Sha'ir may represent the first point of contact with exchange networks to the west, including the Amuq and Cilicia (McCarthy 2007), as well as linking these areas to the eastern route along the modern Syro-Turkish border towards the Balikh and Khabur basins *en route* to Iran (Peltenburg 1997). The idea of settlements being in contact with communities to the west is further substantiated by the low mounded Uruk site of Duluk (Site 2: LC 3–5), at the confluence of the Sajur and the Euphrates Rivers. The position of Duluk provides easy access to communities and their hinterlands up the Sajur River, as well as being placed directly on the north-south Euphrates river-system.

The evidence for Uruk-type settlements being part of an extensive exploitation of the local landscape and being linked into east-west communication routes argues against a channeled and direct southern Mesopotamian dominance and exploitation of a

northern periphery (Algaze 1989; 2001). Instead, while links with southern Mesopotamia were clearly maintained (*e.g.* bitumen from Hit, Peltenburg *et al.* 1997, 3; Stein and Misir 1994, 151), the 'Uruk' inhabitants of this region were part of a social environment within which they were active participants. Tell Jerablus Tahtani as a 12 ha settlement or activity area would augment our understanding of the Uruk expansion represented by sites such as the 8–18 ha site of Habuba Kabira South (Strommenger 1980, 33) and Tell Sheikh Hassan level 5 (Boese 1989). Thinking of these Uruk-related sites in terms of active participants in local development necessitates a re-evaluation of the nature of the Uruk 'intrusion', as involvement with local communities and those to the east, west and north may have been as important as contact with the south (McCarthy 2007).

Following the Uruk period, the sequence at Tell Jerablus Tahtani indicates a continuation in settlement on the floodplain terrace, with evidence of the continued use of administrative artefacts (Peltenburg 1999a, 100) demonstrating east-west contact (*ibid.*; McCarthy 2007). By *circa* 2700 BC, this open EB settlement was replaced by the Period 2B fortified nucleated settlement. This new architectural style accounts for the majority of the present height of the conical tell, and it probably represents a typical pattern of development of the Early Bronze Age settlements in the survey area. The Early Bronze Age settlements from the Carchemish region, perhaps including Carchemish itself, follow the pattern of nucleated settlements of various sizes forming a ranked hierarchy. At the same time, while Carchemish in the third millennium may have been increasing in size and prominence in the region, it is also clear that second-tier (Tell Amarna, Site 21) and smaller third-tier sites (such as Tell Jerablus Tahtani and Sites 10 and 11), including hilltop tells such as Sites 1 and 5 and Tell Shioukh Fawqani on the opposite bank of the Euphrates had a more complex relationship with the expanding urban centre of Carchemish than a simple rank-size analysis might suggest. Evidence for trade, local craftsmanship, large-scale fortification systems and monumental tombs (Tomb 302, Peltenburg *et al.* 1995, 7–14; Peltenburg *et al.* 1996, 13–14; Peltenburg 1999b) at a third-tier site such as Tell Jerablus Tahtani may indicate that size does not necessarily equate with importance, and a complex relationship between small but important sites and larger urban settlements may have been organised in a way that we do not yet fully understand.

Middle Bronze Age, Late Bronze Age and Iron Age Occupations

The pattern of settlement became less distinct during the second and earlier first millennium BC, and although tells (such as Sites 3, 5, 10 and 11) were clearly occupied there was a shift towards a more dispersed pattern of rural settlement. Here the dating of second millennium BC occupation is very preliminary, being based on a limited range of MBA forms such as barrel jars from Tell Hadidi and nearby sites (Dornemann 1979; Wilkinson 2004), and Late Bronze Age forms from Tell Shiukh Fawqani (Bachelot 1999).

Of potential interest in determining the geographical extent of the territories of Hittite Carchemish, are the hill-top settlements of Khirbet Seraisat and Marm al-Hajar (Fig. 1: Sites 1 and 5). The location of the former site with commanding views of the valley of the Euphrates River, and the latter with its views over Carchemish and the Jerablus Plain demonstrates that certain MBA / LBA satellites of Carchemish took advantage of fortified high-point locations. This offers us a potential strategic boundary to the immediate socio-political hinterland of Carchemish.

The process of later dispersal is well represented by the low, extensive Iron Age settlement at Jerablus Tahtani Village (Site 6), which extends over some 250 by 90 m along the edge of the flood plain terrace some 3.5 km south of the city of Carchemish. Being located so near to the Neo-Hittite city of Carchemish, this settlement appears to have functioned as a satellite of that city, and therefore warrants further discussion.

Site 6 Pottery

In addition to a fired clay lion head (see below), intensive surface collection at Site 6 produced a substantial amount of pottery, of which a representative sample of 47 diagnostic sherds were drawn, half the total amount of recorded diagnostics. The predominant form is the open bowl (Fig. 11: nos. 1–16), followed by jars with externally thickened rims (Fig. 12: nos. 19–32). Relatively few show any sign of decoration apart from one dark brown sherd, possibly burnished (Fig. 12: no. 20), and a few with raised bands or grooving. Three sherds are characterized by the appearance of a cream slip on the exterior surfaces, an effect that is sometimes seen in certain Neo-Assyrian ceramics and is technically not a true slip but most likely the result of the firing process (Oates 1959, 131). In terms of fabric colour, most of the sherds fall into two major categories; either a light greyish-brown, or a medium reddish-

brown, with only subtle variations between exterior and interior fabric. The entire site corpus is overwhelmingly sand tempered, and in fact there is a notable presence of large visible white grit common or even abundant throughout most of the collection. Only half of the sherds contain some indication of chaff temper, and relative to the high proportion of grit in the matrix, it is hardly a dominant component.

Based upon their formal attributes the shallow open bowls and jars with club-shaped rims from Site 6 would seem to place the site solidly within the Iron Age. However, although general comparisons exist in the Iron Age levels at sites in the vicinity such as Tille Höyük, Tell Jurn Kabir, Tell Abou Danné and Tell Ahmar, a comparison with these and other published Iron Age assemblages yields few direct parallels. Confounding the precise dating of the Site 6 pottery is the fact that the predominant vessel types tend to be ones that persist throughout long periods with little variation. For example, although the plain shallow bowls with simple curving walls (Fig. 11: nos. 2–3) may be related to a bowl type appearing in early IA levels dating to the 11th–10th century BC at Jurn Kabir (Eidem and Ackermann 1999, Fig. 5, no. 13), they seem equally comparable in form to some examples found in levels from the period of Neo-Assyrian domination or immediately thereafter, such as at Tille Höyük where they have been placed within the Achaemenid period (Blaylock 1999, Fig. 13, nos. 10–11), and at Tell Ahmar where they appear in the Late Assyrian levels and later (Jamieson 2000, Fig. 2, nos. 5–9). In the Assyrian heartland similar types have been recorded in the early 6th century BC at Khirbet Qasrij (Curtis 1989, Fig. 23, no. 12) and at Nineveh they appear with some frequency in the 7th BC century levels (Lumsden 1999, Fig. 4, no. 4 and Wilkinson, forthcoming). Bowls with less flattened, slightly thickened rims (Fig. 11: nos. 5–6) also seem in appearance to be related to a type found in 7th century BC levels at Nineveh (Lumsden 1999, Fig. 4, no. 5), and these are also seen at Khirbet Qasrij (Curtis 1989, Fig. 28, no. 87). They lack the deeper groove on a bowl type found in earlier levels at Jurn Kabir (Eidem and Ackermann 1999, Fig. 4, no. 10), and they may be a later variation on an 11th/10th century BC bowl shape. Another bowl type, with external grooving just below the rim (Fig. 11: no. 7) seems closer to the 6th century BC grooved bowl from Khirbet Qasrij (Curtis 1989, Fig. 23, no. 16) than it does to the superficially similar grooved bowl from the Neo-Hittite levels in Tille Höyük (Blaylock 1999, Fig. 3, no. 7). Other bowls with slightly thickened but flattened rims seem to sit within the Late

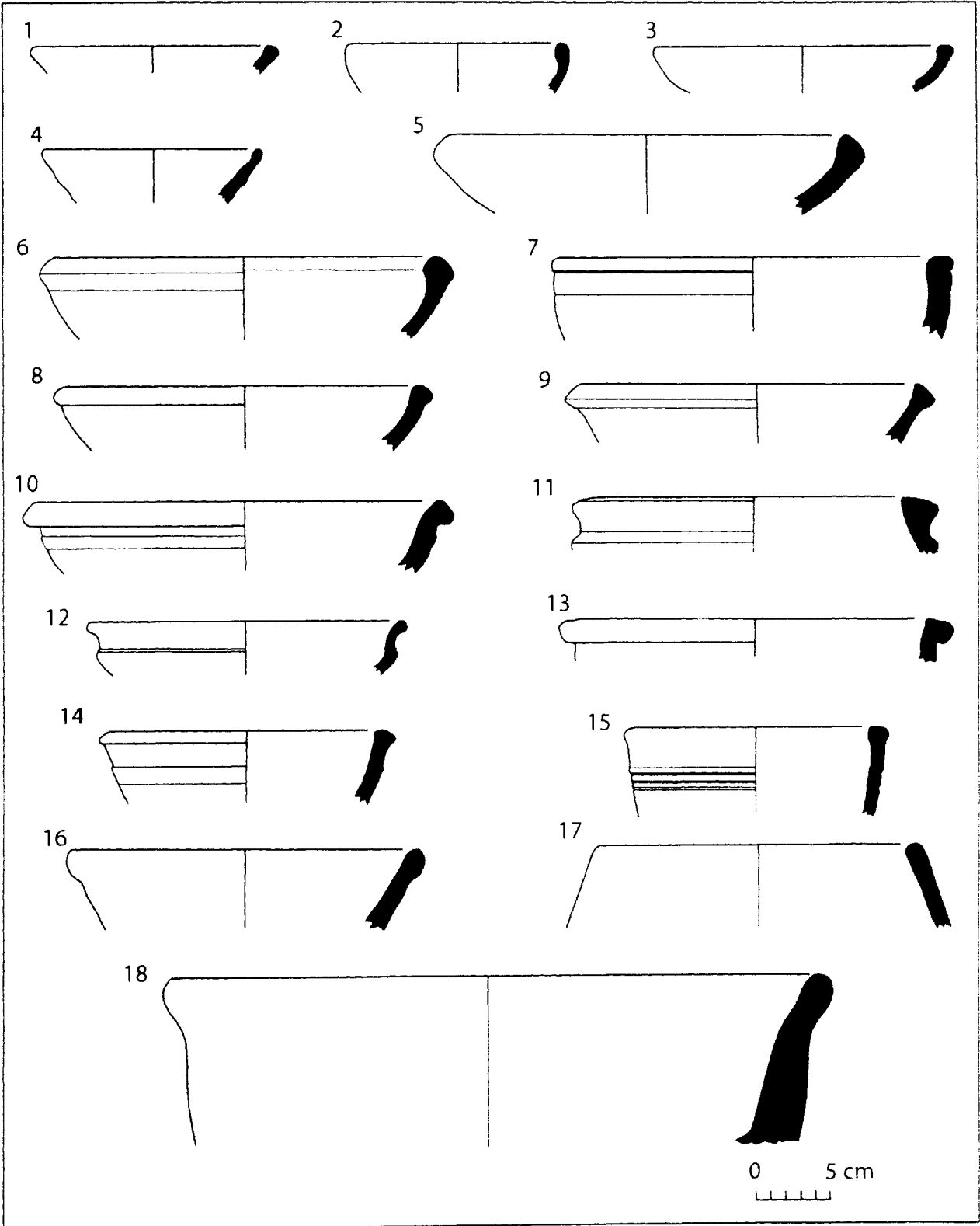


Figure 11. Iron Age ceramics from Jerablus Tahtani village site (Site 6): nos. 1-18.

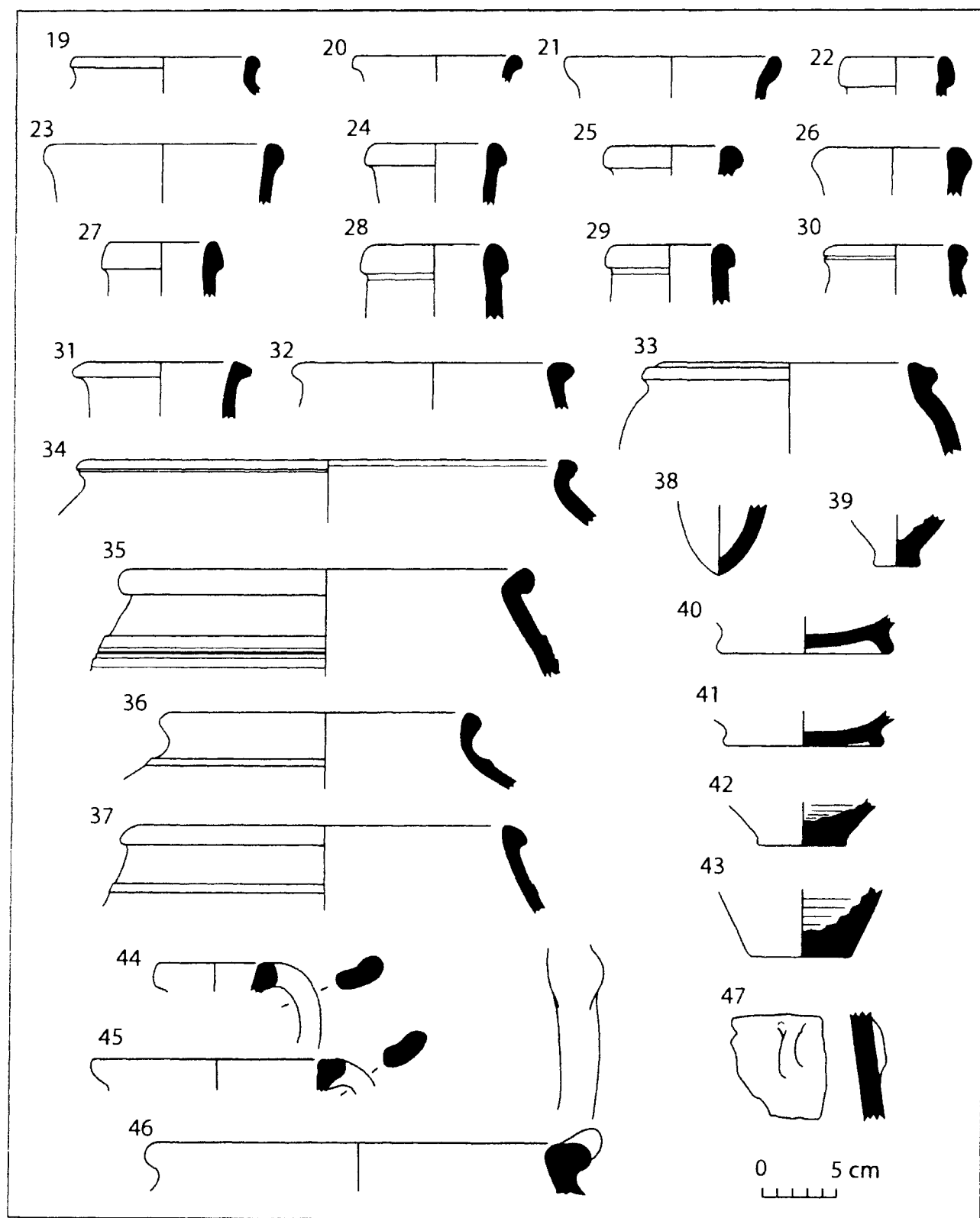


Figure 12. Iron Age ceramics from Jerablus Tahtani village site (Site 6): nos. 19-47).

Assyrian/immediately post-Assyrian ceramic tradition. Compare, for example, Site 6 bowl number 8 (Fig. 11) with one found at Nimrud (Oates 1959, Plate XXXV, no. 3), which is replicated closer to our survey area during the later Iron Age at Tell Ahmar (Jamieson 2000, Fig. 3, nos. 5–9). Other bowl forms (nos. 1, 4, 11–16) appear to be variations on a range of shapes fitting generally within the later Iron Age repertoire. Bowl number 12 (Fig. 11), in particular, seems to develop from, if not actually represent, the open ring-based bowl appearing at, for example, Nimrud (Oates 1959, plate XXXVI, no. 33), a well-known bowl type fabricated in both fine and common wares.

Examples of jar forms recovered from Site 6 (Fig. 12: nos. 23–32) are quite standard Iron Age types, externally thickened and club-shaped in profile. One grooved example was found at Site 6 (Fig. 12: no. 30). They seem to have had a long period of use and development, with a wide variety of subtle variation in profile. A good comparative assemblage, probably from the early 6th century BC is published from Khirbet Qasrij (Curtis 1989, Fig. 32), though they appear earlier as well with great frequency at many Iron Age sites, both in the vicinity of the survey, such as Tell Ahmar (Jamieson 2000, Fig. 6, nos. 13–22 and Fig. 7, nos. 1–11) and those further to the west, including Tell Qarqur (Dorneman 2000, Fig. 16). It is, however, noteworthy that although this jar form shares similarities with those found at Tell Qarqur, the bowl forms from Site 6 bear relatively little comparison to the Iron II (10th–8th century BC) inventory from this more western site (see Dorneman 2000, figs. 14, 15 and 17). The shouldered jars from Site 6 (Fig. 12: nos. 33–37) are equally standard to the Iron Age, although the grooving on the rims of two of them (Fig. 12: nos. 33–34) may indicate a date further into the Hellenistic period. However, a particularly good comparison can be drawn between jar number 35 and a similar jar from nearby Jurn Kabir from the 9th/8th century BC (Eidem and Ackermann 1999, Fig. 7, no. 15).

Despite the general formal similarities between the Site 6 pottery and other Iron Age assemblages known in the region, there is nevertheless a conspicuous absence of certain well-known Iron Age type fossils at Site 6, and the appearance of the fabric is considerably more coarse and gritty than is generally found in pottery associated with Neo-Assyrian occupations further to the east. Three of the most obvious examples of these absent types, standard at sites in many areas within the Neo-Assyrian political orbit, are: bowls with inverted and externally thickened rim with the distinctive hammerhead profile

(sometimes referred to as “Hammerhead bowls”; bowls with grooved rims; and open bowls with everted, thickened rims and carinated shoulder. No examples of these vessels appear at Site 6. The most compelling pottery parallels nevertheless seem to be found at sites with pottery from the late 8th through early 6th century BC. Taken together with the ceramic lion head, the pottery from Site 6 seems to form a coherent assemblage and may possibly represent a localized, distinctively western development of ceramic traditions existing in the region at least around, and probably following, the time of the Assyrian conquest of Carchemish in 717 BC.

A Lion Head Sculpture from Site 6

The remarkable lion head from Site 6 is a small sculpture in the round (Fig. 13). The lion is shown with a gaping mouth, five sinuous folds of skin between upper lip and nose, further wrinkles raised across the nose and below the eyes, and two relief knobs between heavy eyebrows. The tongue, mane and ears are missing, while the teeth are rendered with subtlety except for prominent canines. It is broken from a larger object, and is of fired clay with the appearance of a cream slip similar to some of the aforementioned pottery. Its dimensions are 9.8 cm high, 8.2 cm wide and 8.8 cm deep (Fig. 13).

Lion sculptures are a recurrent theme in this region during the Late Bronze Age at the time of the Hittite Empire and especially in the subsequent Neo-Hittite period in the 1st millennium BC (Akurgal 1949, 39–79). Most depictions in the round are from monuments in stone and these provide the best stylistic analogies for our head. They commonly belong to lions flanking gateways (e.g. Ain Dara A/1, Carchemish J/2, K/19–21, Karatepe A/25, Malatya A/1–2, Maras B/1–2, Sakceğözü A/3, 11, Zincirli C/1–5, D/1–2, H/3, J/1), to free-standing sculptures (Hama C/1), column bases (Halaf Bc/3, Tayinat 1), statue bases (Carchemish F/17, H/11, Zincirli E/1) and protomes (Carchemish K/22, Zincirli K/6) [sculpture nos. from Orthmann 1971]. While most of these extra-mural sculptures were executed in durable basalt, softer limestone was occasionally used for relief work at Carchemish (e.g. C4–6, 8–14 in the Long Wall), especially at the Water-Gate, and for a lion with head in the round at the South Gate (Woolley 1921, Pl. B. 27b). Most of these sculptures, however, have heights in excess of 20 cm, compared to the Site 6 head which is half the size of the smallest of the stone portal lions. Smaller items were embellished with animal heads during the same period, but like the basalt troughs with bull protomes (e.g. Woolley and Barnett 1952, Pl. 69d), these are much smaller than Fig. 13 and so do not

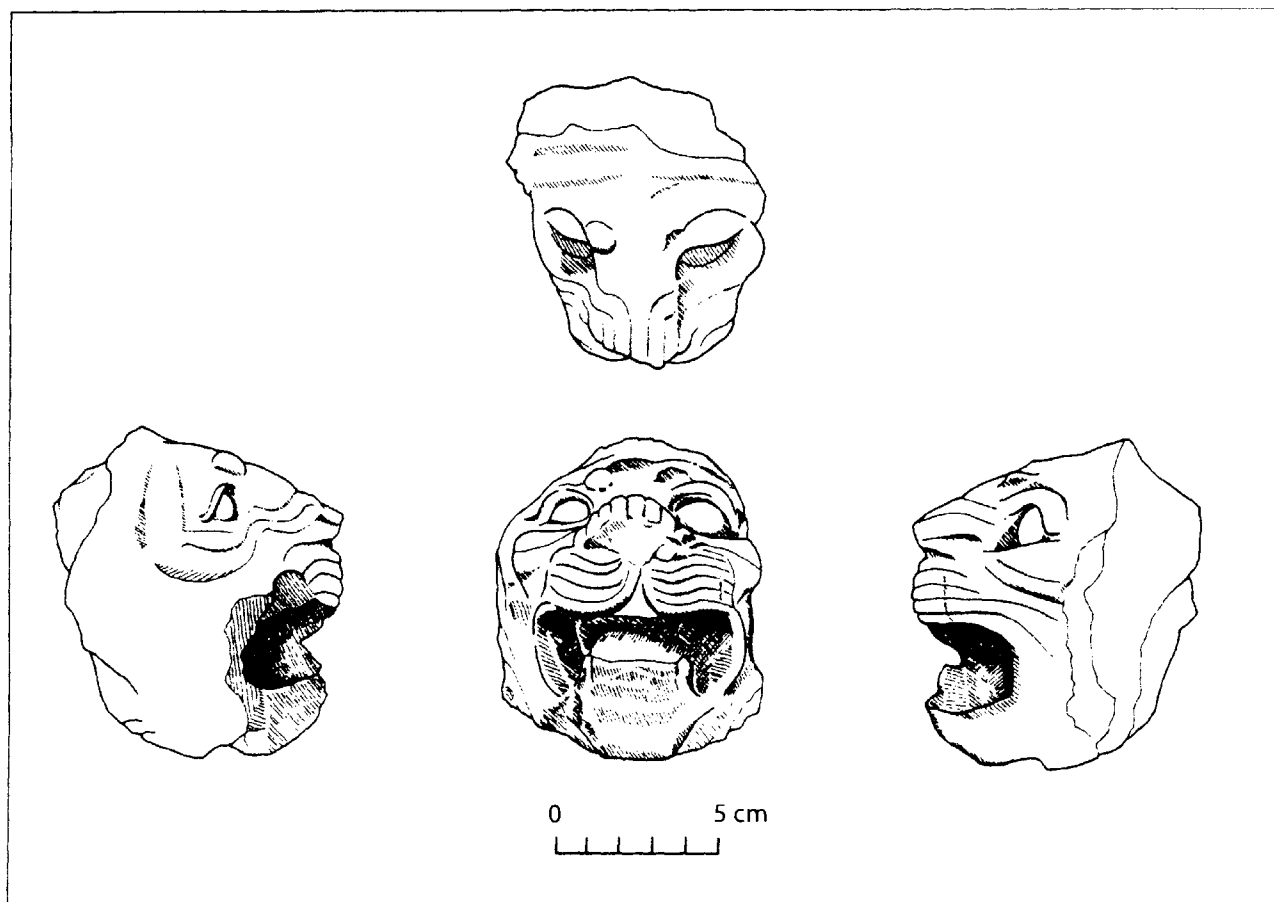


Figure 13. Head of a lion in baked clay from Jerablus Tahtani village site (Site 6).

provide secure guidance for determining the object to which it originally belonged. A 12 cm high dolerite lion base from Room L5 at Zincirli, which may have supported a small statue (Von Luschan 1943, 65, Pl. 12e, and Pl. 12 I for statuette), is also smaller. Ceramic lion sculptures in the round are otherwise unknown from this region during Neo-Hittite times. A vibrant tradition of architectural lions in pottery, such as the guardian lions at the entrance to the temple of Nisaba at Tell Harmel, had existed in the earlier 2nd millennium BC in S. Mesopotamia and SW. Iran, but like the later 2nd millennium ones from Susa and Nuzi, these are quite different from our head (e.g. Spycket 1988).

Stylistically, Fig. 13 is more naturalistic than the majority of the Neo-Hittite renderings of lions. The latter have stylized muzzle furrows, with straight, parallel folds symmetrically arranged to either side of vertical dividers that descend from nose to upper lip (Akurgal 1949, 46–7, Figs. 35–39). Unlike our head, they lack the ridges below the eyes, and the

eyes are schematic, browless discs. In general, therefore, our head has lost the schematization and the cubic shape that characterize lion heads of the earlier Neo-Hittite period, and while the absence of most teeth and protruding tongue reduces the ferocity of its snarl, the whole impression is more naturalistic. Such naturalism is often attributed to Neo-Assyrian influence from the time of Tiglath-Pileser III, as shown in a sequence of lion heads from Zincirli (Frankfort 1996, 301, Fig. 352). The later characteristics (e.g. Zincirli J/1) with the least cubic head shape, and muzzle furrows arched upwards in line with the snarl of the open mouth, belong to Orthmann's Sph IIIb, the later 8th century BC (Orthmann 1971, 70–71, 221). It is no slavish copy of these stone examples, however, since the coroplast eschewed wrinkles shaped like stylized palmette petals below the eyes and the rounded terminals of the muzzle furrows such as those on Tayinat 1. The head supports the dating of pottery from Site 6, but it cannot provide a narrower date

than the later 8th – 7th century BC. Unless it was no more than a protome, the size of the head suggests that the original lion sculpture was either unusually heavy for a portable work or served as an architectural feature in emulation of the monumental stone sculptures so well known at nearby Carchemish.

Hellenistic and Roman

Preliminary dating of Hellenistic cultural phases is based upon the presence of a range of forms including: Hellenistic incurved rim bowls, fish-plates, fold-over jar rims and Hellenistic slipped wares. For this preliminary assessment, diagnostic Roman wares included Eastern Sigillata and related red slipped wares, with the presence of brittle wares extending the chronological range into the late Roman period (see Wilkinson 2004 for diagnostic equivalents for the Tabqa area to the south).

By the Hellenistic / Roman period settlement had started to shift away from tells. This shift towards a more dispersed pattern of small, low sites, is partly accounted for by the development of some settlements in association with the developing network of canals that were nourished by both the Euphrates and its tributaries, as well as a network of roads (see below). This pattern of dispersal is reinforced by the appearance of new sites on hill-tops, such as the splendid Hellenistic Site 18, replete with magnificent rock-cut tombs and a rock-cut stairway, situated on high limestone bluffs overlooking the Euphrates. Nevertheless, that settlement also continued on tells is evident from the abundance of Seleucid incurved rim bowls, fish-plates and Hellenistic slipped wares on Sites 10 and 11, two small prominent tells on the south side of the Nahr al-Amarna (Fig. 1). In addition, Seleucid-Roman occupation is known from Tell Jerablus Tahtani (period 4), at Carchemish, and perhaps also at Tell Amarna.

Byzantine and Early Islamic Settlement

Ceramic dating for Byzantine occupation was based upon a range of brittle ware forms known from Dibsi Faraj (Harper 1980) as well as Late Roman C wares, particularly the distinctive so-called keel-rim bowls. Although the ceramic transition to the Early Islamic period is not always easy to discern, some brittle ware forms could be dated to the Early Islamic period (see Wilkinson 2004 for equivalent examples). Although occasional early Islamic glazed vessels and Islamic cream ware sherds were present on the lower town of Khirbet Seraisat, glazed wares were rare on most sites collected, and we recorded

no sites with large single-period collections of Early Islamic glazed and cream wares.

By the Byzantine and Early Islamic periods² the trend towards a dispersed pattern of small sites — presumably farmsteads, villas, or small villages — is strongly in evidence (Fig. 6 and Table 1). Whereas ten sites of Byzantine/Early Islamic date appear to be low single or double phase settlements, there were no recorded instances of settlement on tells. Where settlement was associated with tells, as was the case at Tell 'Ain al Beidha (Site 10) and Tell Amarna (Site 22), occupation mainly took the form of "lower towns" sprawled over land at the foot of the tell. In the case of the lower town at Tell Amarna, which covered some 6 ha (300 × 200 m) to the east of the tell, settlement also included at least one basilica (associated with a mosaic pavement) located on a nearby hill top (Waliszewski and Chmielewski 2000). By the 5th–9th centuries AD, there had therefore been a major shift not only in the location of where people lived, but presumably in the allocation of land as well. Poorly dated, but indicative of the growing diversity of activities, is evidence for funerary caves, churches and a possible hermitage around Amarna and Qirq-Magār at the confluence of the Sajour and Euphrates rivers (Blanco 1999).

Features of the Classical-Early Islamic landscape

During the survey considerable efforts were made to provide a balanced record of human activity both on tells and other types of obvious settlement as well as away from them. Although landscape evidence is sometimes difficult to date with confidence, it appears that evidence for tracks, canals, miscellaneous sherd scatters, quarries etc, all became increasingly common after approximately the 3rd century BC. Of these features, the presence of canals provided the most compelling record that the inhabitants of the later empires were engaging in engineering activities that were capable of leaving an indelible record on the landscape.

Overall, in the Middle East, evidence for ancient irrigation is relatively rare in those areas where there is sufficient rainfall for rain-fed farming, but evidence for large-scale water supply systems then increases towards the desert areas so that, for example, surveys of the Mari area have yielded abundant evidence for the presence of irrigation systems (Geyer and Monchambert 2003). Finally by the latitude of Baghdad, where cultivation is virtually impossible without irrigation, canals and associated bunds and levees dominate the landscape record.

Despite the occasional record of canals in the Balikh, Khabur and mid-Euphrates valleys (Wilkinson 1998; Ergenzinger et al. 1988; Harper 1975), surveys further upstream in Syria and southern Turkey have produced only rare evidence for the presence of water supply canals. The discovery of at least five separate canal systems in the area of Jerablus Tahtani/Carchemish therefore deserves comment.

a) The largest water supply feature observed was a broad canal excavated into the flood plain terrace between the village of Jemal and Tell Jerablus Tahtani (Fig. 2, 14 and 15). This distinctive feature was originally recognized during Woolley's campaigns, and was mapped by P.L.O. Guy as an "Ancient River Bank" (Woolley 1921, Fig. 5). Today this feature, although following the topography of the ancient Flood Plain Terrace, is clearly evident as a 9–14 m wide trough, approximately 1 m deep, cut in the flattened eastern edge of the terrace. The feature was evidently a canal, and was regarded as such by many local residents, who pointed out that originally it had flowed along a route that passed by Tell Jerablus Tahtani. The canal was not associated with major banks of upcast spoil, neither was it associated with surface pottery, but the sites alongside (Sites 7, 8 and 9 on Fig. 2) suggest that the canal was probably in use during the Byzantine–Early Islamic periods. Although visible on the Corona satellite images, the feature was rendered less distinct because of its course which followed the edge of a relict meander system etched into the flood plain (i.e. the boundary between terrain units ci and cii on Fig. 2). Because of the amount of sedimentary infill, it is difficult to estimate the width of the original channel, but it is clear that this was the largest canal for which we have evidence in the area. The canal flowed roughly parallel to the Euphrates River, which was evidently the source of its water, although the specific location of the intake on the Euphrates remains unknown. Downstream, the canal flowed roughly in the direction of Tell Amarna, but it is not clear whether it reached that site or not, but if it did, an aqueduct would have been necessary to convey the water across the valley of the Nahr al-Amarna.

In addition to the above mentioned canal, four smaller relict channels had conducted water along east-flowing tributaries of the Euphrates. These were (from north to south: i–iv):

i) Wadi Sha'ir, a 50 cm wide rock cut channel that collected its water from 'Ain 'Abid, adjacent to Site 4, and led the water downstream past Site 5 after which the canal could not be followed. However, a water mill (now destroyed) near Site

7, according to local residents, received its water from a channel which drained from the Wadi Sha'ir. The 'Ain 'Abid channel, which is not in use today, appears to have functioned during the 20th century AD. Nevertheless, the style of construction of the channel and its associated settlements suggests that it is an ancient feature probably dating to the late Roman / Byzantine period, that is when Site 4 was occupied.

ii) al-Gini'at. This channel was only evident as a series of rectangular rock-cut ventilation shafts penetrating the floor or side slopes of a narrow wadi (al-Gini'iat) some 3 km NW of Tell Amarna. The shafts form the visible remains of a relict qanat which could be followed approximately 1 km upstream to where a possible water source was located at a steep drop in the bed of the wadi. The local people regard this feature as ancient, but when visited, this could not be related to any known site, therefore no date can be suggested.

iii) Nahr al-Amarna: evident today as a long alignment of dressed ashlar blocks along the northern edge of the gravel terrace near the junction of Wadi Nagut with the Nahr al-Amarna (i.e. close to Site 12: Fig. 2). A cross section of the channel exposed in a small side wadi of the Nahr al-Amarna (Figs. 16 and 17) demonstrates that where the channel flowed through areas of wadi fill, the later phase of the channel measured 80 cm wide by 130 cm deep and was lined with dressed ashlar blocks. Where it passed over rock, the rock cut channel (which comprised at least two phases) was occasionally ventilated by vertical air shafts similar to those at Gini'at. Two geoarchaeological sections suggest that the ashlar-lined channel appears to have been cut into an earlier feature 3–4 metres wide and filled with silty clay. The architecture of the ashlar-lined canal suggests a Hellenistic to Late Antique date, as does its association with Sites 12 and 14, and the channel can be suggested to have formed part of the system of water supply of Tell Amarna and its fields.

iv) The Wadi Khirbet Seraisat, provided a useful insight into the relationship of water supply to industrial installations. At present we only have a partial record of water channels in the immediate vicinity of this sprawling Roman, Byzantine and Early Islamic settlement, because the wadi upstream of Site 1 has not yet been investigated. In the vicinity of the site immediately downstream of the present road (Fig. 18), a rock-cut channel together with a smaller diversion channel led water to the edge of the canyon. Fragments of



Figure 14. *Infilled canal trace near the village of Jemal (location between 7 and 8 on Fig. 2).*

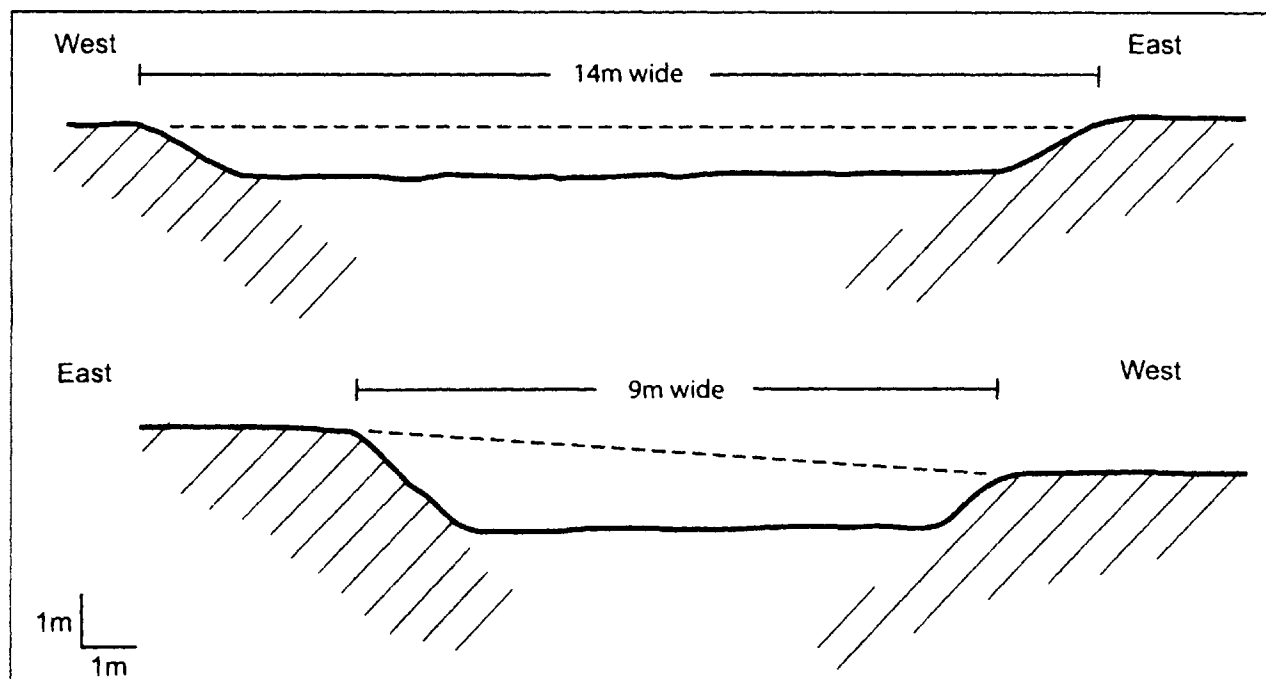


Figure 15. *Sketch profiles across major canal to the north of Jemal village.*

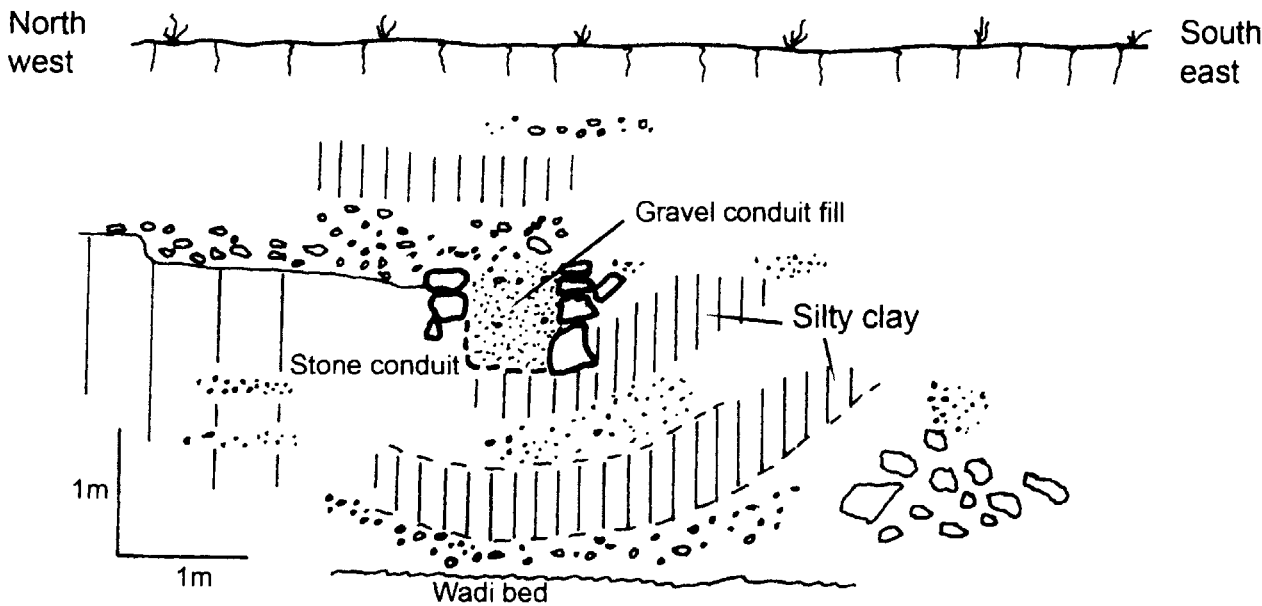


Figure 16. Section of the stone-lined conduit alongside the Nahr al-Amarna (for location see Fig. 2: iii). Note the arc-shaped beds of silty clay may represent an earlier phase of a large earthen canal.



Figure 17. Detail of conduit built of ashlar masonry illustrated on Fig. 16.

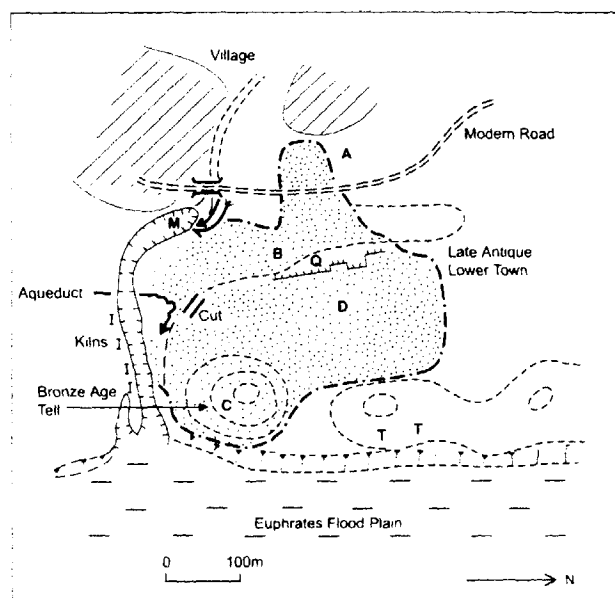


Figure 18. Sketch map of Site 1 (Khirbet Seraisat: stippled). Q=quarry; M=Mill; Cut=road in cutting (Fig. 19); I="Industrial area" with kilns; T= tombs.

masonry at the edge of the canyon suggest that these channels had directed water to a penstock water mill, a common feature of the Roman, Byzantine and Islamic landscape. A short distance downstream another narrow open channel conducted water from upstream and to the south of the wadi, across the wadi by means of what must have been an aqueduct. Downstream, evidence of both channels disappears but a series of kilns for baking lime, manufacturing pottery and related activities are evident in the wadi bank, and it seems likely that some of these activities benefited from water introduced by the upstream channels. From its dry-stone construction technique, it appears that the latest (i.e. aqueduct) phase of channel is of Ottoman date, but given the periods of occupation on the lower town of Khirbet Seraisat (Seleucid to Early Islamic), the early phases of the rock-cut channel were probably in use during this earlier time range.

The above system of water supply consisting of a large trunk channel and four smaller lateral channels must have supplied water to settlements and perhaps estates on the flood plain. Significantly, at the time the water channels were in use the area witnessed an increase in the number of archaeological sites of Hellenistic, Roman and Byzantine date. It therefore seems reasonable to infer that the increase of settlement is associated, in some way, with the development of the water channels.

Quarries

Quarries for ashlar building stones were remarkably common and were distributed throughout the survey area in the following general locations:

- On the crest of limestone hills, or on limestone bluffs overlooking the Euphrates flood plain (5 examples).
- Within the boundaries of Hellenistic, Roman or Byzantine sites (3).
- On the floors of wadis that are tributary to the Euphrates (2).

Most quarries showed traces of grooves that had been cut to effect the extraction of the ashlar blocks, or in certain cases to carry run-off away from the quarry. The largest quarry, located at WP 196 in the floor of the Wadi Sha'ir, measured 84 m E-W and was at least 4 metres deep. The exposed rock face at the east end of the quarry appeared to be inscribed with a short, illegible inscription in Latin.

Because quarries usually lack associated cultural material, they are notoriously difficult to date. Nevertheless, the presence of three quarries within sites that included buildings of ashlar blocks, and which were dated by surface ceramics to the Hellenistic – Late Antique period, suggests that, as in other parts of the northern Levant, many quarries are of Hellenistic to Late Antique date. The results of the survey suggest that the activity of quarrying took place in many different parts of the landscape, both within and away from settlement sites. This testifies to the extensive use of land during the Roman – Late Antique period when settlement was becoming widely dispersed across the landscape and perhaps when property rights or common access to land were changing and being re-negotiated.

Roads & tracks

Field evidence of roads and tracks was scarce, but at WP 193 numerous small grooves were observed incised into the limestone bedrock that formed the base of the Wadi Sha'ir. The grooves, measuring typically 8 cm wide by 4 cm deep, appear to have been incised in antiquity, either by wheeled vehicles or sleds, the latter used perhaps for hauling ashlar blocks from stone quarries upstream. Their lack of pairing suggests that if they do result from haulage (either carts or sleds), incision was asymmetrical because they were incised either where vehicles were turning or only running partially across limestone bedrock.

At Khirbet Seraisat (Site 1), a magnificent section of rock-cut road was recorded adjacent to the wadi



Figure 19. *Short stretch of rock-cut road at Khirbet Seraisat looking south.*

in the southern sector of the site (Fig. 19), but unfortunately there is no evidence of whether this linked up with other systems of Roman roads in the region. For example, the Peutinger map shows a road flanking the Euphrates immediately south of Carchemish (Blanco 1999, 659, Fig. 3). While we found no trace of this, the straight modern road between Jerablus and Carchemish may follow its line.

Water mill

No complete examples of water mills were recorded, but at Khirbet Seraisat a vaulted wall of a possible mill chamber and associated inlet channels hint that a mill had been present (Fig. 18: M), and near Site 7 a local man reported the former existence of a second mill. The presence of these features suggest that the above-mentioned water channels were not simply used for the supply of irrigation and drinking water but were also harnessed as a means of power supply.

Off-site survey of the flood plain

Because the flood plain terrace between Carchemish and Tell Jerablus Tahtani would have been the focus of a considerable amount of human activity, this area was subject to a fairly intensive strategy of surface collection. Sampling was effected by means of transects that were laid out in order to determine a) whether smaller sites were present between previously recognized major sites, b) whether the records of fourth and early third millennium BC settlement evident in the well holes had any surface expression, and c) whether surface sherd scatters equivalent to so-called "field scatters" were present across the ground surface. In April 2006 when the survey was conducted, a significant amount of the terrace surface was obscured by cereal crops, so that surface collection could only take place within "windows" represented by ploughed fields destined for the growth of cotton later in the year. A total of 20 fields were surveyed by means of 65 transects. The surface collection strategy entailed team members walking

Land of Carchemish: sherd densities

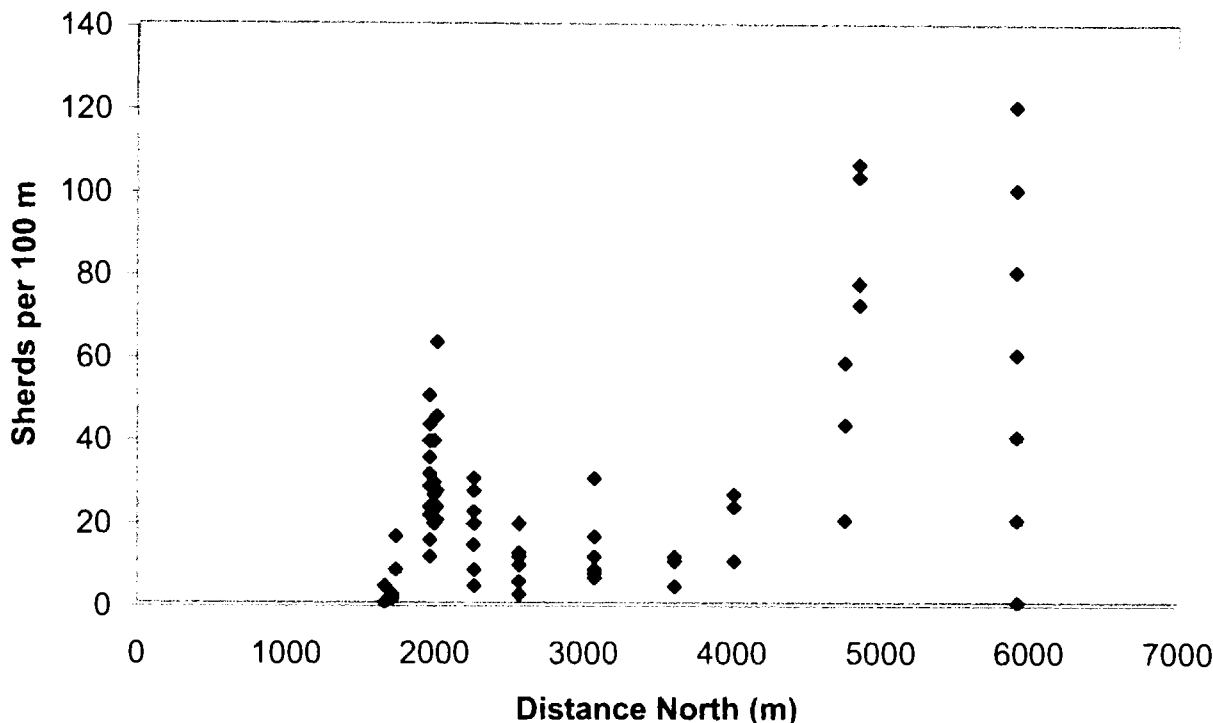


Figure 20. Sherd scatter densities on the Jerablus plain recorded from transect samples. North to right; Carchemish is a short distance to the right (north) of 7000.

in 100 m lengths, usually 10 m apart. All surface sherds, lithics, and other artefacts were collected and counted, and whenever possible the total sherd collection was retained for later analysis and photography. Wherever wells provided a section through the soils, the exposed soil profile was recorded as a control to indicate whether cultural debris, wall foundations etc. were associated with the surface scatters. Overall the combined collection of surface sherds and scrutiny of soil sections provided an excellent three-dimensional view of the landscape.

The geographical extent of the transects, some 4.5 km from north to south, provided a broad estimate of surface scatters of artefacts from a little south of the outer walls of Carchemish to immediately south of Tell Jerablus Tahtani (located at northing 2049 on Fig. 20). With the exception of two or three transects on a low-lying field a short distance south of Tell Jerablus Tahtani, most transect-recorded pot-

tery counts were in the range 4 to 40 sherds per 100 m (of transect), with occasional outliers rising up to 106 sherds per 100 m. Although surface scatters appeared to be somewhat higher to the north near Carchemish, data points were too few to say whether this was the case for the entire northern part of the plain. Between around 4000 N and 2250 N scatters hovered in the range 4–30 sherds, but in the vicinity of Tell Jerablus Tahtani surface scatters peaked to values in excess of 60 sherds per 100 m. This was at least partly because some transects were close to the site and fell apparently within the orbit of what appears to have been a lower settlement of Tell Jerablus Tahtani. Whereas surface pottery from most transects was generally late in date (that is in the range Hellenistic to Late Antique), in those transects close to Tell Jerablus Tahtani, fragments of chaff-tempered wares and occasional bevelled rim bowls were evident. This supports the evidence from the wells, that there was some form of lower settle-

ment to the west of the tell in the late fourth and early third millennium BC.

The surface artefact scatters could be divided into two components:

- First a general background noise of surface material which was dominated by pottery of Hellenistic to Early Islamic date. Where ever wells supplied control sections, these scatters were seen to occur within plough soils – there was no evidence for deposits of cultural material that would indicate *in situ* occupation.
- Second, the scatters in the vicinity of Tell Jerablus Tahtani which, according to the control sections in wells, were associated with buried off-site activity in the form of fourth and early third millennium pottery contained mainly in pits.

Although it is clearly necessary to conduct more surface collections, especially further to the north near the town of Jerablus, the first group of scatters may be interpreted as typical “field scatters” that result from the spreading of settlement midden material and waste as fertilizer on fields. In contrast the surface material found in the vicinity of Tell Jerablus Tahtani (i.e. the second group) includes significantly larger potsherds that are less abraded and which occur at higher densities. These can tentatively be interpreted as representing artefacts from a lower town, as was recorded in the well sections (see above).

Discussion and Conclusions

As a result of the 2006 field season it is now evident that later Pleistocene and early Holocene settlement included a number of hilltop sites. From their location, with excellent views over the surrounding valleys, such sites must have offered good vantage points for hunting. That they were not simply hunting camps, however, is suggested at Site 20 by the significant depth of cultural material and the presence of walls. Although there are no monumental features to suggest that Site 20 had ritual functions equivalent to, for example, Göbekli Hoyuk, near Urfa, such a possibility cannot be ruled out. It is also necessary to allow for the presence of an unknown amount of settlement buried below major multi-period sites such as Tell Amarna, as well as perhaps on the flood plain. At the same time, preliminary walking surveys along a number of east-west valleys as well as where such valleys entered the flood plain, have yielded no evidence of Neolithic occupations. The presence of Sites 13 and 20 on elevated hill

summits suggests therefore that we should broaden our perspective on settlement during the transition to domestication. The PPNB appears to have formed part of an early Holocene transitional phase that was not only characterized by the shift towards agricultural settlement on the lower and middle terraces of the riverine zone, but also was a period when earlier traditions of hunter-gatherer settlement also persisted. The proximity of the Halaf Site 19 in the wadi below Site 20, suggests that by the 6th millennium BC lower altitude sites closer to agricultural resources may have been preferred. At this time the classic tell must have become a characteristic form of settlement.

By the fourth millennium BC the rudiments of a network of Uruk settlements, many of them tells, was in place. Tell Jerablus Tahtani was presumably linked to the west with the Uruk settlement at Tell Sha'ir (Site 3), and across the river with equivalent occupations at Tell Shioukh Fawqani. Of particular interest was the presence of an extensive lower settlement (or activity area) immediately west, southwest and northwest of Tell Jerablus Tahtani. Here, preliminary evidence suggests that the ca. 1 ha tell was matched by an area of activity extending over some 12 ha. That only parts of this activity register on the surface is evident from transects to the north of the tell that failed to record any significant Uruk material (perhaps because here the relevant material is more deeply buried).

Although it would be unwise to exaggerate the significance of what is little more than pits below a veneer of alluvial soil, it is noteworthy that other recent surveys have supplied evidence for expansive phases of settlement during the Late Chalcolithic / northern Uruk periods immediately beyond the conventional boundaries of tells. Thus surveys around Tell Brak by Ur and Karsgaard have now yielded abundant remains of early/middle Late Chalcolithic settlement in the form of patchy surface sherd scatters and pits significantly beyond the tell (Ur and Karsgaard 2004). Tell Hamoukar is matched to the south by the expansive, but enigmatic “southern extension” (Khirbet al-Fukhar: Ur 2002) of early Late Chalcolithic date, and it is possible that the LP sounding to the west of Tell al-Hawa (Iraq) may represent a similar type of outlier (Ball et al. 1989). Although these outliers were not occupied at the precisely the same time, it is tempting to see them as forming part of a process of urban implosion that preceded the development of walled tells that conform to our idealized view of the northern tell-based city.

Despite the fact that tells were clearly starting to form as early as the Halaf and Ubaid, it was perhaps

not until the third millennium BC, that they became defining features in the cultural landscape. But even then, this “landscape of tells”, with its hierarchy of settlement crowned by the “citadel city” of Carchemish at its apex, was supplemented by a wider range of settlement types that included small hill top settlements (as at Sites 1 and 5), as well as occasional ritual sites and a range of funerary monuments.

Unfortunately, evidence for Middle Bronze Age settlement and indeed the period when Carchemish acted as an administrative outpost of the Hittite Empire remains to be clarified. For example, Tell Jerablus Tahtani was abandoned during the second millennium (Peltenburg 2007), and occupation at Tell Amarna seems to have declined (Tunca 1999). Within the survey area in general, this apparent decline is not because settlement was necessarily lacking at this time, but simply because the material culture recovered by the survey needs further study. Nevertheless, by the first millennium BC Site 6 provides good evidence of an Iron Age presence in the form of pottery and the fired clay lion’s head. This site, which may have been occupied when Carchemish attained its maximum size during the Neo-Hittite period (ca. 1000–717 BC: Hawkins 1997, 424), or slightly later, was therefore almost certainly a satellite community of Carchemish. Moreover, being essentially a single period settlement, this appears to be the initial phase of what became a long process of increasingly dispersed settlement across the region.

Overall, archaeological surveys have recorded two phases during which small village and farmstead-scale settlements became dispersed across the landscape away from the classic tells. The first was during the first millennium BC when the Jazira and parts of the northern Levant formed part of the Neo-Assyrian Empire, and the second occurred during the Hellenistic to Early Islamic periods when the expansive empires of the Seleucids, Romans, Byzantines and Islamic Caliphates dominated the political administration of northern Syria (Wilkinson 2003). Although Site 6 might form evidence of the first Neo-Assyrian phase of dispersion, there is little other evidence to support that this was anything but a satellite of Neo-Hittite Carchemish. On the other hand the evidence of the second phase is well represented and, as has been recorded in other parts of the northern Levant (Marfoe 1979; Algaze *et al.* 1994; Casana 2003, 2007; Philip *et al.* 2005), the landscape becomes remarkably “busy” and well populated during the Seleucid, Roman, Byzantine and Early Islamic periods. This is also a period during which a plethora of features such as canals,

quarries, tracks, and offsite sherd scatters, all become significant elements in the landscape. Significantly, the relatively dense off-site sherd scatters may even have masked some smaller rural settlements, although as yet we have no evidence for these from the well sections examined. Overall, although the total number of sites is small, there is a progressive increase in smaller dispersed settlements from the 3rd century BC, which appears to reach a peak during the Late Antique period when the area was under Byzantine administration.

This phase of settlement dispersal, represents a phase of reorganization away from the long-term norm for the region, namely nucleated settlements on tells. This may be interpreted in the following manner by reference to long term changes in the organization of settlement and land use. During the Bronze Age, when occupation was clustered and immediately around tells, one can suggest that land use was probably a corporate enterprise involving the entire community, with perhaps joint land-holding and the sharing of plough animals, either under the administration of a council of elders or a local chief or king. Such land use practices, which are paralleled by the so-called *musha'* practices of the Ottoman period would have discouraged settlement on the corporately organized fields, and overall greater security would have been afforded within the protective confines of the central settlement (Wilkinson 2003). In contrast, with the changes of administration ushered in by the later empires (in the case of the Jerablus region, the Seleucids and later) traditional practices of land administration would have been eroded and a new wave of settlement and land allocation probably took place. Although in the area of Jerablus it is not yet possible to demonstrate precisely what these changes were, the landscape survey supplies compelling evidence for major changes in land organization, in the form of dispersed settlements, the shift off tells towards lower towns, the development of numerous canals, as well as the widespread scatter of quarries across the landscape. These, together with the presence of conduits and more widely dispersed forms of settlement, suggests that earlier notions of common land holding (or pasture) may have been on the wane and that the new communities were seeking their essential supplies from areas that formerly may have been grazing lands under the corporate control of the tell-based communities.

The construction of canals and conduits in an area that today enjoys a rainfall of some 400 mm per annum indicates that agricultural practices were being intensified to produce greater yields per hectare. Such practices of intensification were also

enhanced by the application of fertilizer in the form of settlement-derived refuse, which resulted in the well-developed scatters of sherds across the fields of the Flood Plain Terrace. Overall therefore, the land of Carchemish became a very busy landscape in which not only had the locus of settlement shifted away from the traditional tell, but also land use practices had become intensified to produce significantly greater yields. It is significant that such changes do not appear to have taken place at a stroke, but rather occurred over a period of several centuries, with some settlement persisting on tells during the Seleucid period, but with an increasing emphasis on dispersed rural settlement during the Byzantine period. Although there was a pattern of rural dispersal, that this was not an entirely rural landscape should be emphasized by the presence of a large Roman town at Carchemish, which was suggested by Woolley to be the city of Europos (but see Blanco [1999] for alternative locations).

If it is possible to recognize a break in the structure of later settlement, it is not between the Byzantine and Early Islamic phases. Here there is a considerable degree of continuity, both in terms of material culture and in settlement pattern. Surface pottery collections show that brittle wares of Byzantine date as well as Late Roman C bowls are followed by a characteristic assemblage of Early Islamic brittle wares. Significantly, it is after the 8th or 9th centuries AD that there is a marked change in the settlement structure. The Period 5 medieval Islamic settlement on the summit of Tell Jerablus Tahtani, dated c. 900–1200/1250 AD represents one of the few settlements of this date in the region. Moreover, this occupation represents the resumption of settlement on tells, but whether this indicates a total shift in the pattern of land holding at this time, or whether it was simply an opportunistic occupation of a convenient hill-top is not clear.

These preliminary results have started to rectify a striking contrast between the large number of sites evident north of Carchemish (c. 40) and the paucity to the south (Algaze et al. 1994). In terms of general settlement trends, our preliminary results compare well with patterns immediately north of Carchemish (cf. Algaze et al. 1994, 82, Fig. 18). Eventually, it may be possible to aggregate some of this data to provide an overall evaluation of developments in the land of Carchemish.

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Notes

¹ Referred to as Tell Amarna, Chantier L, by the Belgian team, but for this referred to as LCP-19 (Wadi Amarna) to distinguish it the site from Tell Amarna (LCP 21) which is some 600 m to the NE, and from the Nahr al-Amarna which is the large channel adjacent to Tell Amarna.

² Also referred to as the Late Antique period. For this we follow Cameron's (1993) definition of Late Antiquity, namely a period of transition that encompasses the late Roman period, and the reign of Justinian (AD 527–565) until immediately before the region was incorporated into the expanding Islamic empires. The span, from the late 4th century until around AD 600, does not include the early phases of the Islamic caliphates. However, we should point out that settlement on several "Late Antique" sites in the region appears to continue for some time into the early Islamic period.

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